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FLEET OWNER

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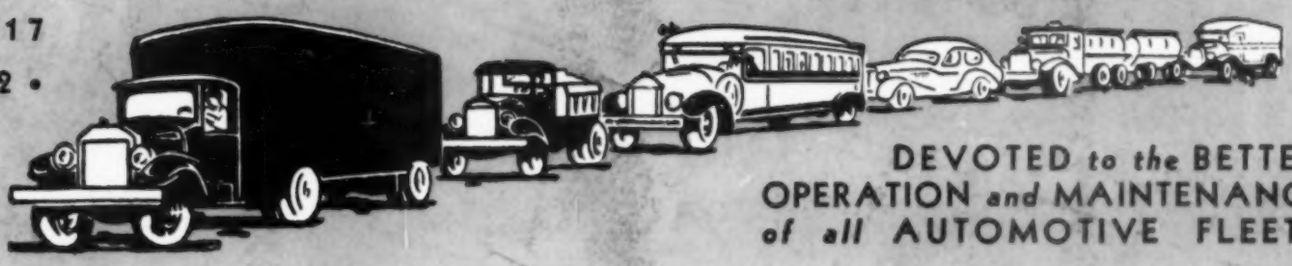

DEVOTED *to the* BETTER OPERATION *and* MAINTENANCE *of all* AUTOMOTIVE FLEETS

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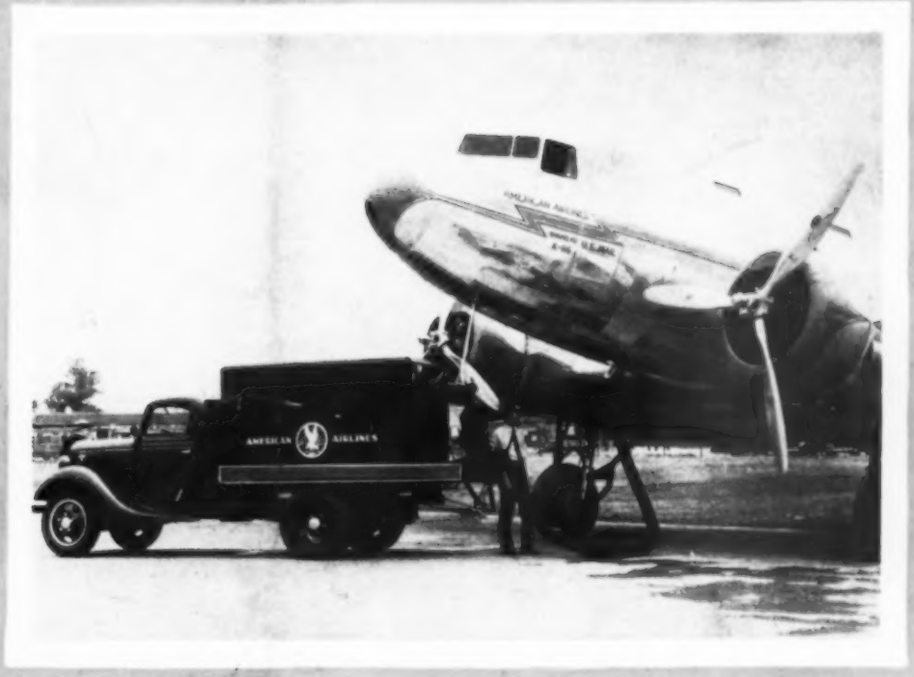

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AUGUST
1936

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"They keep our trucks rolling."
—BRASHEAR TRUCK CO

"As severe as a test could be."
—ETEX BUS LINES

LONG HAULS—HEAVY LOADS—CONTINUOUS SERVICE

THOMPSON ENGINE AND CHASSIS PARTS KEEP TRUCKS ON THE ROAD

THOMPSON PRODUCTS, INC.

CLEVELAND • DETROIT

"Your products have given 100% satisfaction."—SQUARE DEAL CARTAGE

"Thompson Products save us a lot of grief."
—JACOB LAUB BAKING CO

"Increased horsepower—reduced oil consumption."—
BOSWELL BROS. MOTOR FREIGHT CO

"We use Thompson Parts—there are none better."
—IVES ICE CREAM COMPANY

Thompson Products

WARLIKE MANEUVERS OF ARMY TRUCKS PROVE VALUE OF NEW TIRE INVENTION

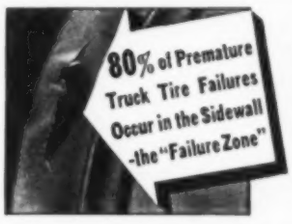
Thundering across open country, heavy army trucks and armored cars stop for nothing. They crash through underbrush, speed over highways, hurdle ditches if necessary . . . . Smack! A front tire takes a terrific impact as the car hits a curb-high bump. There's a screech as the driver yanks the wheel around a sharp curve. And the tires are twisted, dragged, tortured. Traveling over fields or highways, there's always the bruising, battering punishment of heavy loads on tire sidewalls. Every day is war for tires!

You'll find Goodrich Triple Protected Silvertowns on these big land battleships. You'll find the same tires on hundreds of the world's toughest trucking jobs. Because Silvertowns are *Triple Protected.*

Protects Against Blow-Outs

Every Goodrich Truck Tire has a new invention built into the sidewall—a 3-way check against blow-outs and breaks. This protection actually checks 80% of premature failures! No wonder operators everywhere choose Silvertowns for their toughest hauls—save money on any kind of haul.

Whether you carry one ton or twenty to a load, you can cut down on failures and delays, jump your mileage with Triple Protected Silvertowns. Don't spend another penny for tires until you see the local Goodrich dealer.



ONLY GOODRICH OFFERS THIS TRIPLE PROTECTION

1 PLYFLEX—distributes stresses throughout the tire—prevents ply separation—checks local weakness.

2 PLY-LOCK—protects the tire from breaks caused by short plies tearing loose above the bead.

3 100% FULL-FLOATING CORD—eliminates cross cords from *all* plies—reduces heat in the tire 12%.

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Goodrich *Triple Protected* Silvertowns

SPECIFY THESE NEW SILVERTOWN TIRES FOR TRUCKS AND BUSES

No more OIL

New kind of Motor Oil gives more miles per quart . . . lessens cylinder wear . . . lowers maintenance costs

Now, Texaco has produced a new—entirely different—kind of oil that will bring further economies to motor truck operators everywhere.

A new crude . . . a new process . . . a new refinery . . . were necessary before we could make it. The basis of this new process is a new refining material called Furfural.

When an oil is treated with Furfural, a stronger lubricating film is produced . . . a film that gives greater resistance to heat in hot engine cylinders.

This is because the New Texaco Motor Oil is *all lubricant*. Waste products, usually present to gum and stick piston rings . . . form carbon . . . or produce sludge in your crankcase, are removed. That is why this oil lasts longer and provides greater protection for the engines you operate.

A Texaco representative will be glad to provide practical engineering service to truck fleet operators to prove the economies you get with the New Texaco Motor Oil.

THE TEXAS COMPANY

135 East 42nd Street · New York City

Nation-wide distribution facilities assure prompt delivery

New TEXACO

THIRSTY *trucks*

TEXACO
REG. T. M.

MOTOR OIL

After a Year's Convincing Experience Under All Conditions of Service

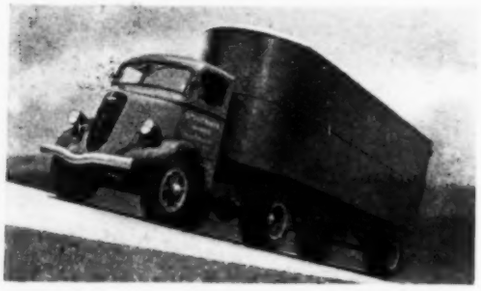
STUDEBAKER

ENDORSES

FOR USE ON ALL STUDEBAKER TRUCKS AND BUSES because FRAM keeps the oil and motor clean and free of all injurious impurities.

FRAM

SAVES REPAIR BILLS
SAVES THE MOTOR
REDUCES OIL BILLS
MATERIALLY REDUCES OPERATING COSTS



Fleet operators may now order their Studebaker trucks and buses FRAM equipped at the factory for a small additional cost that is quickly returned to them in oil bill savings alone.

All 1937 Studebaker Cars Are Fram-Equipped

After a year's experience with FRAM as standard equipment on the 1936 President model, Studebaker is equipping *all* 1937 passenger cars—Dictators as well as Presidents—with FRAMS.

This is not only a striking tribute to FRAM but is just one more indication of STUDEBAKER'S far sighted policy of LEADERSHIP in pioneering in the selection of the best and most modern equipment regardless of cost.

STUDEBAKER is one of the first manufacturers to realize the importance of CLEAN OIL and to give their owners the outstanding economies of a FRAM equipped motor.

FLEMING MFG. COMPANY, INC.
135 Stafford St. WORCESTER, MASS.

FRAM
OIL & MOTOR CLEANER
FRAM
THE DIP STICK TELLS THE STORY
FRAM
PAYS FOR ITSELF IN OIL SAVINGS EVERY 7000 MILES
FLEMING MFG. CO. INC. WORCESTER, MASS. U.S.A.

Write today for folder showing typical Studebaker installations and featuring WHAT HAPPENS TO THE OIL IN THE CRANKCASE.

Fleming Manufacturing Co., Inc.
135 Stafford St., Worcester, Mass.

Please send Studebaker folder. We are also interested in FRAMS on .....

Name .....

Address .....

City ..... State .....

AN EXCLUSIVE AND

REMARKABLE DEVELOPMENT

IN THICK-TYPE BRAKE MATERIAL

American Brakeblok engineers have *perfected* a thick-type brake block whose performance and economy far surpass that of any previous development in this field. The block—known as American Brakeblok Number 99—is a remarkable and exclusive achievement.

Number 99 maintains a practically constant coefficient of friction even as braking temperatures increase to their high limits. This means uniform braking performance and the elimination of any loss in efficiency under the most severe usage. It is of first importance from the standpoint of safety and quick stops—and in meeting any and all compulsory safety tests.

Equally important to the operator is the fact that Number 99 withstands the highest braking heats without swelling or separating—and without excessive wear. American Brakeblok Number 99 is establishing absolutely new and sensational records for both efficiency and mileage.

When you install American Brakeblok Number 99, you can depend on it to reduce costs for brake material and brake service and to provide extra safety and protection against brake failure. Every operator, maintenance superintendent, shop foreman and brake mechanic should become immediately familiar with the advantages of American Brakeblok Number 99. Write for the full facts.

American Brakeblok

AMERICAN BRAKEBLOK

THE SAFETY BRAKE LINING

AMERICAN BRAKEBLOK CORPORATION, 4600 Merritt Ave., Detroit
A Division of American Brake Shoe and Foundry Co.

REDO OFFERS

FLEXIBILITY —*ease and softness in handling*

STRENGTH —*tremendous resistance to abrasion and flexing*

APPEARANCE—*attractive colorings in popular grains*

VARIETY —*solid or two-tone Spanish effects*

REDO UPHOLSTERY is a specially constructed material built for wear, appearance and economy. Redo can be used wherever a rugged, wear-resistant, weather and time defying material is required—for both deep spring furniture upholstery and transportation seating. The tough, flexible coating of Redo is resistant to abrasion or flexing and provides those qualities which insure the most exacting service.

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He's looking for flaws in a New Departure Bearing that's just taken a beating. He's having no luck.

Tests that kill any but the best

This tough forged steel stands up!

GET WHAT YOU WANT WHEN YOU WANT IT!

There are 1466 New Departure Bearing distributors in the United States. That means you can get the bearing you want, *at once!*

EACH type of New Departure Bearings has to take it on the proving ground. When you want a bearing for a replacement job, call the New Departure distributor. He'll deliver bearings that can do more than you'll ever ask them to. It's the toughness that was beaten into the steel in the forge that gives New Departure extra strength. There's a New Departure distributor around the corner. He knows bearings. He's a straight shooter. You'll save time and money dealing with him.

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A NATIONAL ORGANIZATION

NEW DEPARTURE

THE *FORGED STEEL* BEARING

SPEED

Summer-rush Repairs

by

THOROUGH OAKITE CLEANING

Getting repair work out of the shop ON TIME is a problem that confronts every fleet operator. This is particularly true on hot summer days when every exertion is an effort and jobs are apt to lag.

CUTS CLEANING TIME IN HALF

Then it is that you will appreciate the thoroughness of Oakite cleaning materials. Powerful energetic Oakite action often cuts cleaning time in half. Moreover, Oakite cleaning is thorough. It gets ALL the dirt and grime, SPEEDING UP inspection, encouraging quick, accurate repair and assembling.

Put our 27 years' successful experience to work for you. The resulting economies will surprise you. Write today for interesting booklet.

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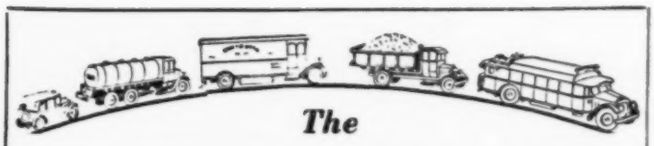
SPECIALIZED INDUSTRIAL CLEANING MATERIALS & METHODS



The

FLEET OWNER

Published Monthly in the interests of Automotive Fleet Owners, who maintain their own Repair and Service Shops and devoted to the better Operation and Maintenance of Truck, Trailer, Bus, Passenger Car, Taxicab and all Automotive Fleets.

VOL. 17 New York, August, 1936 No. 2

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Published Monthly By

FERGUSON PUBLISHING COMPANY, Inc.

90 West Street, New York, N. Y.

(Telephone: REctor 2-9179)

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CIRCULATION SUPERVISOR:
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Subscription: $2.00 Yearly; Single Copies 25c

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Capacity... Economy... Style

IN GMC MEDIUM AND HEAVY DUTY TRUCKS

A GMC is just the truck for business men with big, bulky loads that call for a vehicle of ample size and with the stamina and economy to assure greater savings or earnings.

Take the GMC 3-ton, at only $895 chassis f.o.b. Pontiac. On the score of performance you can safely place your faith in such features as GMC valve-in-head engine, truck-built clutch, heavy-duty transmission, roller-bearing steering, set-back front axle and massive full-floating rear axle.

Economy features include down-draft carburetor, oil bath air cleaner, complete full-pressure lubrication, exhaust valve seat inserts, oil filter, removable main bearings and many other quality refinements.

And so eye-arresting is the advanced streamlined styling of this big, rugged GMC that owners can place a real dollars-and-cents value on such fine appearance. All in all, this modern GMC in the 3-ton range as well as every other type in the medium and heavier-duty ranges is truly an exceptional value—one that is a challenge to the field, especially when price is considered.

GMC
THE TRUCK OF VALUE
½ TO 15 TONS

Time payments available through our own Y. M. A. C. 6% plan.

General Motors Trucks and Trailers

GENERAL MOTORS TRUCK COMPANY, PONTIAC, MICHIGAN

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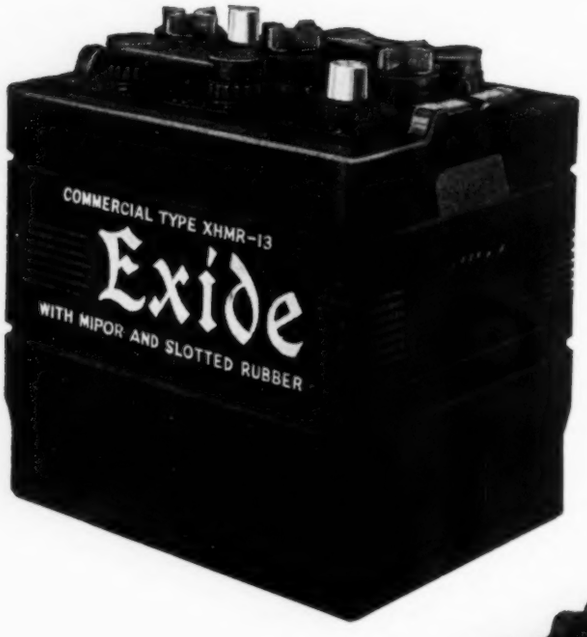
with MIPOR and SLOTTED RUBBER



What a combination! Mipor, the new latex-base separator, withstands the severe overheating, which accompanies long day-time runs — resists vibration wear yet possesses exceptional conductivity — Slotted Rubber plate protectors retain active material and insure capacity during the battery's long life.

Compare these added all-star features . . .

★ EXTRA-HIGH THICK PLATES . . . Positives same thickness as negatives. Almost 5/8" higher than standard plates. This increased plate area means extra capacity.

★ QUARTER-TURN VENT PLUGS . . . A time saver when adding water.

Specifications

TYPE	XHMR-13	XHMR-15
Length	9 1/16"	10 1/4"
Width	7 1/16"	7 1/16"
Height	9 3/8"	9 3/8"
Weight	46 lbs.	52 lbs.
Capacities		
20 Hr. Rate	101 A. H.	118 A. H.
300 Amps. at 0° F. for	2.9 Min.	4.0 Min.

COMMERCIAL TYPE

Batteries

★ **EXTRA ELECTROLYTE SPACE . . . To lessen watering frequency.**

★ **HEAVY DUTY GENUINE HARD RUBBER CONTAINER . . . Four rib element supports.**

★ **HEAVY INTER-CELL CONNECTORS.**

★ **CORROSION-PROOF POST SEALS.**

★ **BEVEL-CORNERED PLATES . . . WITH FEET.**

Write for the name of the nearest Exide Wholesaler who can give you complete details on the new line of Exide Commercial Type Batteries.

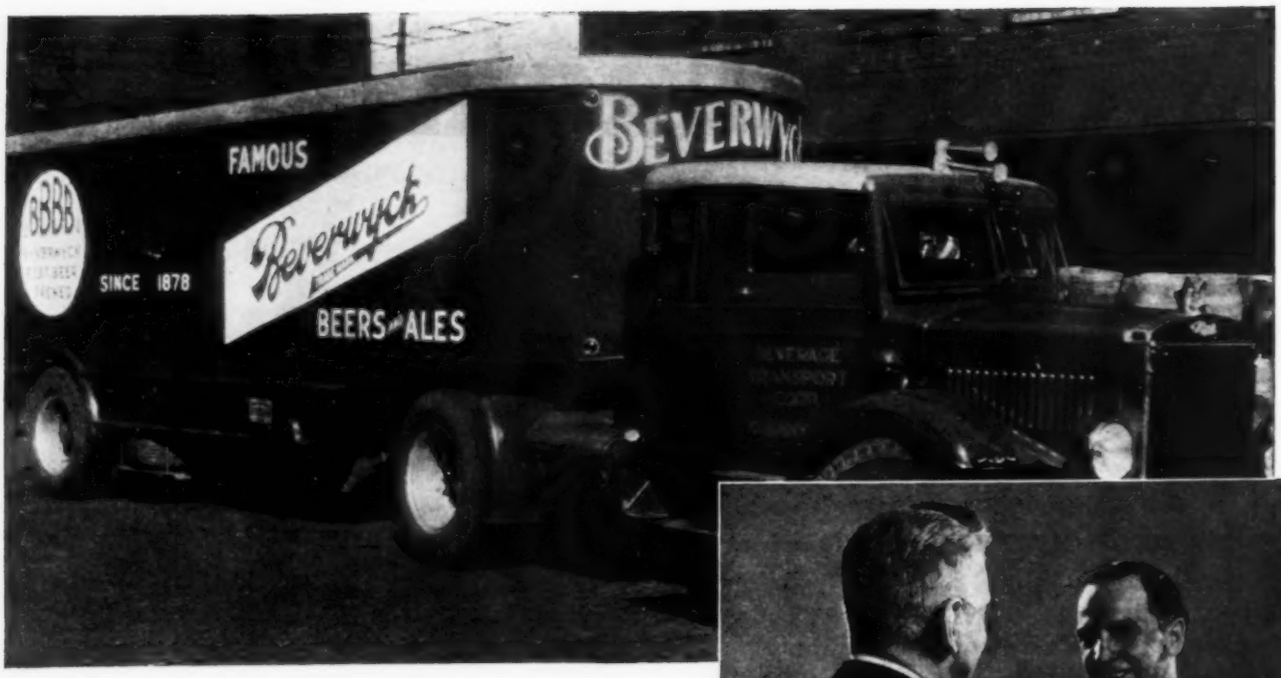
THE ELECTRIC STORAGE BATTERY CO., Philadelphia
The World's Largest Manufacturers of Storage Batteries for Every Purpose
Exide Batteries of Canada, Limited, Toronto

EXIDE

Commercial Type Batteries Equal or Exceed the S. A. E. and U. S. Government Standards Both for Capacity and Life.

Specifications

TYPE	XHMR-17	XHMR-19
Length	11½"	12⅝"
Width	7⅛"	7⅛"
Height	9⅝"	9⅝"
Weight	59 lbs.	67 lbs.
Capacities		
20 Hr. Rate	135 A. H.	152 A. H.
300 Amps. at 0° F. for	5.0 Min.	6.1 Min.



"2 Records Broken, Mr. Warner"

Lubri-Zol increased road miles between oil changes 25% . . . Operated 25,000 miles adding only 2 lbs. of gear lube.

. . . Mr. Warner writes:

"Our consumption of gear lube in each truck had been roughly 7 pounds in each 1000 miles. We installed Lubri-Zol Super Extreme Pressure Gear Oil and since that time have experienced none of our former transmission and differential troubles. Each unit was examined after 25,000 miles and found *entirely free* of sludge. During the period we used Lubri-Zol only two pounds was added in the entire fleet, and this in one unit. Lubri-Zol Extreme Pressure Motor Oil increased our road miles 25% between changes, considerably reducing lubrication labor cost. The solvent action entirely eliminated sludge."

THE BEVERAGE TRANSPORT CORP.

Preston G. Warner

Precision Instrument Protection with Lubri-Zol Lubricants

First used in the lubrication of precision machinery and instruments—recently made available for the lubrication of heavy duty trucks—Lubri-Zol Extreme Pressure Lubricants are breaking mileage records, speeding schedules, saving thousands of dollars for fleet operators.

The Lubri-Zol process scientifically blends halogenated hydrocarbons with pure petroleum oils. This *patented processing produces a film strength 2 to 5 times greater than ordinary lubricants. Lubri-Zol is unique in its ability to reduce friction, heat and wear, and protect under *all* driving conditions.

In addition, the halogenated hydrocarbons in Lubri-Zol dissolve sludge and gummy carbon binder, and lengthen time between overhauls.

The free Lubri-Zol Fleet Record System may show you savings you never thought possible. Write *now* for full details. Let us prove how Lubri-Zol can save money in your fleet—speed schedules—increase mileage—and prolong the life of your equipment. The Lubri-Zol Corporation, Cleveland, Ohio.

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LUBRI ZOL

REG. U. S. PAT. OFF.

EXTREME PRESSURE LUBRICANTS

VOL. 17
NO. 2

FLEET OWNER

AUGUST
1936

DEVOTED TO THE BETTER OPERATION AND MAINTENANCE OF TRUCK, TRAILER, BUS, TAXICAB, PASSENGER CAR, AND ALL AUTOMOTIVE FLEETS.

Stripping *the* Thread » »

(The Editor's Column)

A GOOD LUBRICATION STORY?

● Several of our fleet-operator friends who had the opportunity of an advance "peek" at our lubrication article, did not hesitate to tell us that it was the most thorough and the *best* of its kind which they have read *anywhere*. . . . We are referring to the one on page 20 of this issue. . . . The author, our good friend "A. Maintenance Mann," prefers to remain anonymous for company reasons and because his findings might prove somewhat controversial. . . . But when you read this article, you'll remember that it is based on *facts*, won't you, and that the data in it comes right out of the fleet's records. . . . Since the subject of lubrication is one that commands a wide diversity of beliefs and opinions, we'll be glad to guarantee that you'll find this article highly interesting, if not entirely in accordance with your own ideas. . . . If you could but visit this man's establishment and view his complete "bag-of-tricks" in connection with oil-testing in actual service, you'd be sure to go away with one of two ideas. . . . Either that he is "nuts" when it comes to lubrication; or else that he is sincerely trying to get the most for his money, without spending too much in order to find out how to do it. . . . The latter is *our* impression, and we trust you'll agree with us after reading the article. . . . It's on page 20 of this issue, gentlemen!

●

WHO HAS A WORD FOR IT?

● The Greeks may have had a word for it, but not your Uncle Samuel, for hundreds, and perhaps thousands of men in all parts of this country are trying to find a word that can be used to describe activities under which approximately $200,000,000 in tax proceeds are being used each year for purposes other than those for which the money was collected. . . . Those activities, relating to proceeds of gasoline taxes and other special levies placed upon owners and users of automobiles, until now have been described by the word "diversion." . . . But "diversion" means golf, the movies, a game of bridge or something else of the sort to just about everybody. . . . And those who know the truth about the extent of misappropriation of money paid by motorists—money raised to build and maintain highways—think the annual "grab" of a fifth of a billion dollars is anything but entertaining. . . . And so they are still looking for a word. Can *you* suggest one?

●

THANKS, MR. KAYSER!

● A couple of months back we asked for pictures to be shown on our front cover and the response is very gratifying. . . . However, since we only have *one* cover per month, it's going to be hard to include all of the pictures received, and we'll perhaps print some of them in this column.

. . . The accompanying attractive job is one of the new streamlined semi-trailer jobs in the fleet of The St. Louis Dairy Company. Its capacity is 1,000 gallons and it boasts complete mechanical and electrical refrigeration equipment for continuous operation and/or a 12-hour hold-over period. . . . Mr. Edwin A. Kayser, vice-president, sent the picture in and suggests that we tell you that the body was built by The Herman Body Company of St. Louis, Mo. . . . The tractor is one of Henry's V-8's.

●

THE COVER PICTURE

● Any time you want some nice cool air, these sweltering hot days, all you have to do is order it. . . . And, believe it or don't, it will be shipped by truck! . . . The picture on our front cover this month proves it. . . . When planes are left standing in the sun, particularly the large air transports, the cabins heat up very rapidly, and must be precooled before passengers enter. . . . The outfit pictured on our front cover for supplying this air, consists of a unit mounted on channels, suitable for installation on a truck chassis. . . . The lower section of the unit consists of a hold-over tank, properly insulated for heating or cooling, containing steam coils or electrical resistance for heating the tank contents for winter heating service, and icing coils for summer cooling service. . . . In the summer, water is used in the tank. When steam heating is required in winter, an anti-freeze solution is used. The liquid is circulated through the coils of a unit heat-exchanger and the filtered air passes around these coils to be

(*Please turn over*)

●

H. Clay Fischer
Editor

●

The Editor's Column » »

(Continued from Page 15)

CAB-Over-Engine Note: Here is an advance glimpse at a new cab-over-engine conversion on Chevrolet's 113-inch job, the first to be made. . . . This deluxe warehouseman's van was used initially to publicize Chevrolet's Soap Box Derby. . . . Fruehauf built the semi-trailer and Montpelier is responsible for the cab-over-engine job. . . . Ask us for the addresses if you want them.—H. C. F.

either cooled or heated. . . . A high-pressure blower fan delivers the conditioned air through a flexible tube directly where it is required. . . . A refrigerating machine is connected to icing coils, so that a mass of ice can be frozen in the tank, for the purpose of cooling the water circulated through the heat-exchanger. . . . We are giving you this rather long-winded description because we believe you are interested in all *new* developments, especially those that utilize motor trucks in their operation.

•

"LIGHTER CAR" PREDICTED

● For many months fleet men have been heard to utter semi-silent prayers for a "lighter" car, claiming that the "all three" offerings are fine for the individual motorist, but not quite economical enough for commercial operation. . . . Truck manufacturers have attempted to provide the "answer" in several recent ½-ton offerings. . . . Of intimate significance is the statement made last month by none other than Mr. Henry Ford, that "the automobile of the future will be a lighter car and one that is more economical." . . . If you are good at putting two and two together, you will remember the recent rumor that *someone* is going to bring out a really *small* V-8 job, for both passenger-car and commercial use. And then there is another rumor that one or two four-cylinder cars (of conventional size) may make their appearance in 1937. . . . We don't know a thing about *any* of these rumors, and generally refrain from breathing a word about them until they actually materialize. . . . So if we are wrong about all of this, please forgive us. Rumors are fine things to pep up an erstwhile dull conversation, but are not exactly the best things to put into print, in our humble opinion.

WHAT'S IN A NAME?

● That old saying, "*What's in a Name?*" certainly seems to be as good as ever. . . . For example, we have, in the truck industry the following oddities in names: A gentleman answering to the name of "Black" is president of White Trucks. . . . The chief engineer of Studebaker Truck happens to be none other than J. A. Packard. . . . And if you have read your last month's FLEET OWNER, you will have learned that R. G. Hudson is now manager of Studebaker's Truck Division. . . . Then there is a fellow by the name of Dodge, who is, believe it or don't, the chief engineer of Four-Wheel-Drive Truck Company. . . . And the president of Autocar Trucks answers to the name of Page; not P-a-i-g-e, however. . . . There are, of course, other name oddities of this kind, but what with Summer in the air, and everything, it's hard to think of them all, as this is being dashed off.

•

MERCHANDISING NOTE

● Petroleum operators and others whose daily work utilizes tank-trucks, will find the accompanying photo-

graph of interest. . . . Built-in display cabinets are a new feature of tank-truck design, making it possible to carry in compartments of various sizes, other specialties kindred to the industry engaged in. . . . The cabinets are entirely enclosed and are equipped with flush-type locks. When closed, the streamlined appearance of the vehicle is enhanced. . . . Farrell Manufacturing Company, who developed this idea, claims that the extra profit possibilities accompanying the use of such equipment, will sometimes help to pay truck operation and maintenance costs out of the extra profits made from the "plus" sales thus created, on the theory that goods well displayed are half sold.

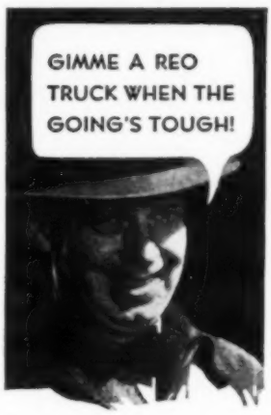
•

GIVING YOU A "BREAK"

● As this is being written, we are in the midst of the hottest weather in the history of New York City. But the "show must go on" and who are we to quit work and go swimming? . . . Realizing that the summer weather and vacations sort of mess up things in the routine of one's daily work, we are going to give you (and ourselves) a so-called "break" by refraining from including a new questionnaire in this issue. . . . Our Question-of-the-Month Club—(the *original*, if you please) will be continued, however, in September or October. . . . We know that you will appreciate our omitting this department during the summer months, especially since it will remove *one* burden from your shoulders. . . . The good old law-of-averages has taught us not to expect *too* much in the way of questionnaire-returns during the hot weather. . . . So you won't find a new one in this issue. Don't look for it this month, gentlemen; it's just not there. . . . But we'll be back at you in the fall, stronger than ever. . . . And to those who were good enough to answer the last two questionnaires, please have patience if you have not as yet received your mimeographed summaries. These are now in the process of work and will be mailed any day now. . . . Thanks, a lot.

"HIGH-BALLING" OR HEAVY HAULING

—A REO TRUCK CAN TAKE IT!



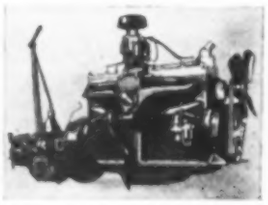
Reo Speedwagons and Trucks range from ½ to 4-6 tons. Chassis prices from $445 up, f. o. b. Lansing, plus tax. *½-ton chassis, f. o. b. Lansing, plus tax.*

REGARDLESS of how varied or tough the tasks you assign it, the rugged Reo truck can be depended upon to come through with flying colors.

Reo trucks are built from the ground up for heavy duty purposes. Their sturdy Reo Gold Crown and Silver Crown truck engines have extra strength and wearing qualities built in at every point. They are *tough truck engines* designed specifically for tough truck service. On the road and on your cost sheets, they prove their ability to make money and save money on every hauling job.

Every heavy duty Reo truck has a husky 7-bearing crankshaft. Two-speed rear axles, 5-speed transmissions and double-reduction axles are now available. Consult the nearest Reo dealer on your truck requirements. He will help you select the truck that is "tailor-fitted" to your needs. Call him today. There is no obligation.

Climbing grades up to 45%! Two Reo trucks, loaded to full rated capacity, climb Stone Mountain over rocks and boulders.

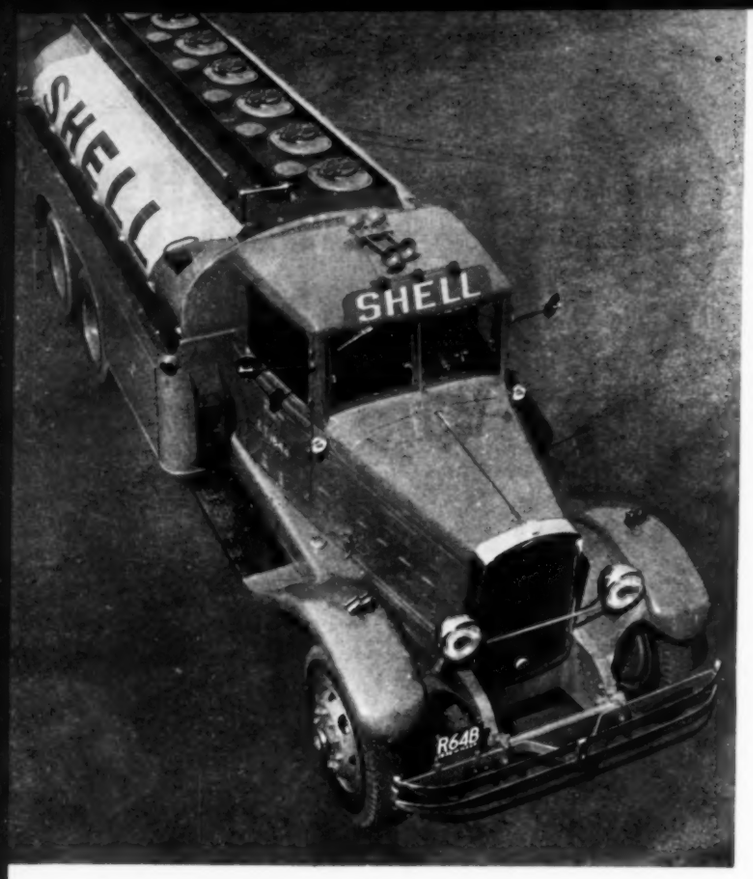


All Reo Speedwagons and Trucks are powered with rugged, economical, Reo-built Gold Crown or Silver Crown truck engines. For 1936, these famous motors have been made even more efficient.

America's Toughest Truck!

In repeated tests, a 1936 Reo 2-3 Ton Truck, equipped with the Reo Gold Crown Engine, pulled an 80-ton load without laboring!

REO SPEEDWAGONS AND TRUCKS



Newest Shell Tank-Truck Features:

SAFETY CONVENIENCE, CLEANLINESS

•

SOMEWHAT unique in the development of "tanks that roll" is Shell Petroleum's newest tank-truck unit, designated as "E.T.1844", and illustrated on this page. It features, among many other safety devices, a new type of "cat walk" designed under the direction of Capt. G. E. Gray, Automotive Manager for Shell.

The "cat walk" is supplemented by a flight of easily ascended steps, and an 8-inch high brass rail, thus making it easy for drivers, loaders or dealers to mount the tank and inspect all compartments. It is clearly visible in the accompanying illustrations.

Believing that highway safety "begins at home", a multitude of safety devices have been installed on this new unit. Typical of the new installations recently adopted as standard for all Shell road tanks are the fittings of E. T. (Eastern Truck) 1844. Electric turn signals operated from the steering post are mounted on both sides, at the rear and on front fenders.

When the driver intends making a left turn, let us say, he throws on the turn signal switch about 100 feet before he begins to change his course. At once, both night and day, the turn signals on the left side begin to flash—red to the cars behind and green to those approaching ahead.

As the driver puts his foot on the brakes, motorists coming from behind have further warning from the dual stoplights on the rear. The bulbs are of 32-candlepower and are mounted behind specially colored amber lenses, selected after many tests because of exceptional visibility in sunlight. These bright amber lights blink off and on 100 times a minute while brakes are on. In addition, the truck is fitted with 21-candlepower dual red tail-lights which are turned on by the driver at dusk.

Two red reflectors on the rear give protection in case of an electrical failure, and the truck also carries three electric flares for use if it is halted for repairs on the road.

A valuable safety principle is embodied in the clearance lights placed at 45° angles on both front and rear of the tank body. Because of their position, and an oval lens construction, the motorist approaching from the side at an angle can gauge the vehicle accurately and judge its speed and direction. Front clearance lights show yellow; rear ones red.

In addition to the newest standard safety lighting and turn signals, E. T. 1844, operating in the New England Division, has a very heavy bumper mounted directly on the frame of the vehicle on the same principle used in building bumpers of railroad cars. This type of bumper withstands a very severe shock and is a decided advance over bumpers of lighter construction mounted on the tanks. Faucets are located directly behind the bumper. When not in use, the hose folds into the small compartments on either side of tank, an improvement to prevent the possibility of hose ends picking up dust.

An interesting feature developed especially to deliver canned motor oil in perfect condition is found in the boxes built into the skirting on both sides. Constructed under "refrigerator" specifications, the boxes are absolutely dust proof and water tight, thus assuring dealers fresh-looking cans for their customers'

(*Please turn to page* 67)

A SUCCESS STORY of Interest to you Mr. Truck Operator

4 gears *Lower* than usually available - *more power* when needed

●

4 gears *Higher* than usually available - more profitable *speed* when wanted

●

High efficiency with remarkable economy *always*

THE two speed axle idea, pioneered by Eaton, is being given phenomenal acceptance rarely accorded a piece of truck equipment.

Sales of trucks carrying this axle are mounting each week — the natural result of the increased profits being obtained by operators through ability to adapt truck speed, engine speed, power and fuel consumption more closely to the complex hauling conditions existing today.

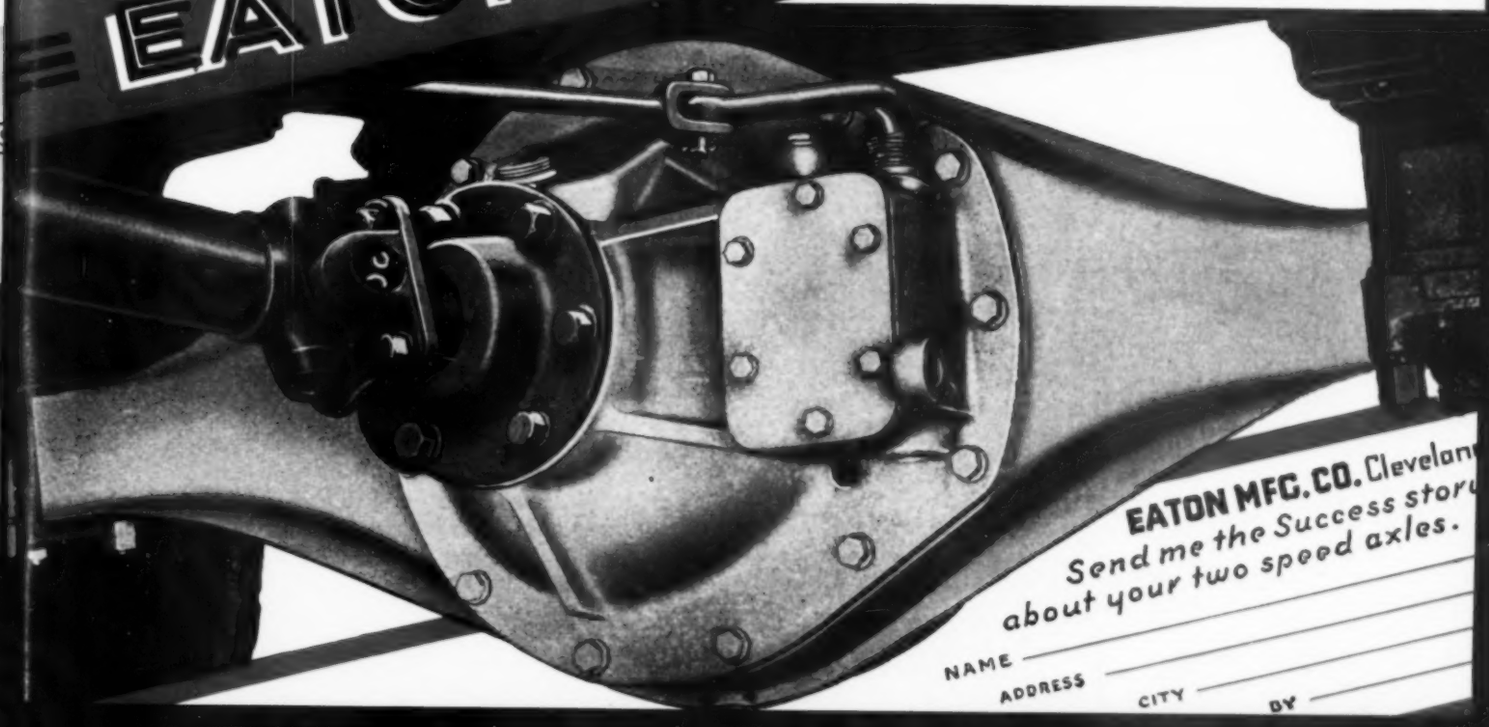
You too, can enjoy these advantages, as Eaton 2-speed axles are available in sizes for trucks with capacities from 1½ tons up.

Send the coupon for information regarding this 2-speed axle which is rapidly coming to be regarded as absolutely essential to most efficient and profitable truck operation under present day conditions.

EATON MANUFACTURING COMPANY
CLEVELAND
OHIO

EATON 2 *Rockstell SPEED AXLE

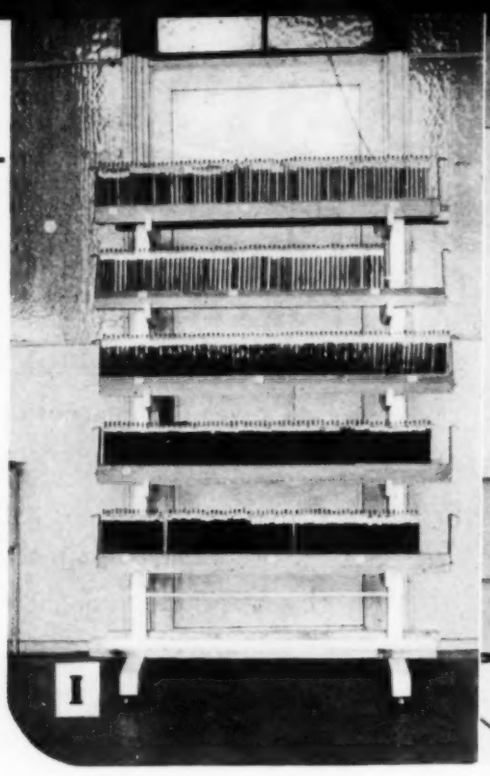
★ The **PIONEER** 2 speed axle of which over 500,000 units have been sold



EATON MFG. CO. Cleveland
Send me the Success story about your two speed axles.

NAME _____

ADDRESS _____ CITY _____ BY _____



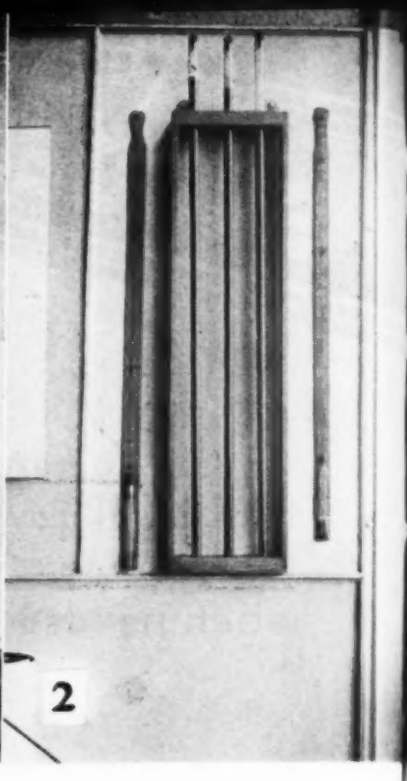


FIGURE 1 is a special rack which this operator built, to hold test tubes containing samples of used oils, reclaimed oils and oils undergoing oil-filter tests. . . . FIGURE 2 is a rack made for holding large tubes used in checking precipitation of solids in barrels of used crankcase oil.

• IS • THIS • THE • ANSWER • TO •

MOTOR FLEET

THE author of this article, who prefers to remain anonymous, thinks that it is . . . . You'll find it chock full of good, meaty, experience data . . . . At least, its' a conscientious attempt to pass on what ONE fleet man has learned about Lubrication.—H. C. F.

THE subject of motor fleet Lubrication is a highly controversial one. Every fleet maintenance man knows that. Wherever there's a controversy, most of us like to stick our necks in. The writer is no different. Before beginning, he trusts you will forgive the anonymity of this article. It's not so much that he doesn't want to get into any lengthy dissertations on the subject with other fleet men; rather, because of certain conditions well known to all of us, it's best not to reveal the identity of the fleet whose experiences are about to be related.

The information as to lubrication practices, the cost figures and other data are *accurate*, however—all of which should lend weight to this article; that is, if the principles and practices do not receive very much in the way of universal acceptance.

Our fleet, roughly speaking, consists of about 100 vehicles, used in door-to-door delivery work in a large city in Pennsylvania—chock full of crooked streets, traffic and suburbs. Most of our units are straight trucks, ranging from ½-ton commercial panel delivery jobs to 2½-tonners and including 1-ton and 2-ton chasses as well.

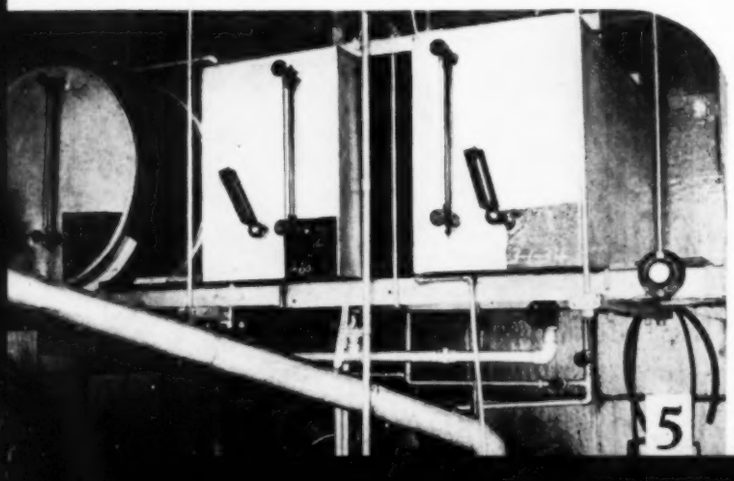
As to makes, Whites seem to predominate, but there are several Fords, Internationals, GMC's, Diamond-T's and other makes. There's very little in the way of tractor-trailer combinations in this fleet, three of these jobs being all we have at the present time. We enjoy standardization to a moderate degree, since some of these vehicles are as alike as peas in a pod.

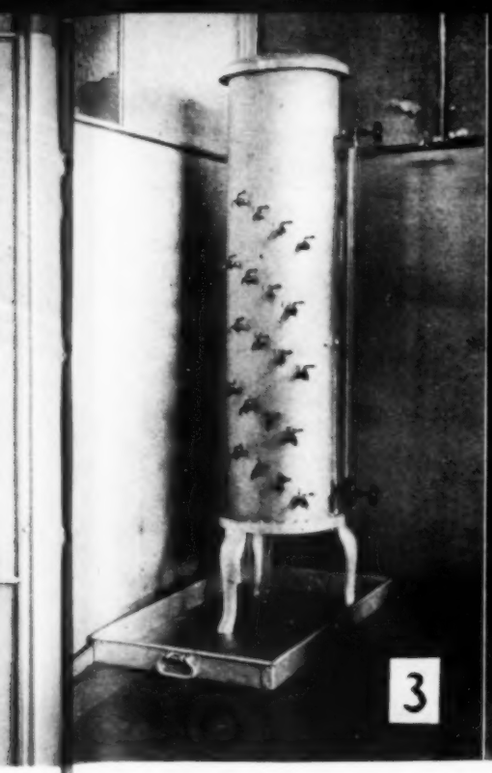
Because of the fact that our daily mileage varies so greatly with the different units, all oil-changes are done according to speedometer readings. The mileage? Every 2,000 miles, of course. We used to change oil every 500 to 1,000 miles, depending on operating variables, but the installation of *good* oil-filters on every unit in the fleet enabled us to stretch the period to 2,000 miles. (More will be said on the subject of oil-filters later on in this article).

We use quality oils—S.A.E. 30 in Winter, and S.A.E. 50 in Summer. From this you will see that we are "old-fashioned" to the extent that we like heavy-bodied motor oils of as high a viscosity as possible, consistent with the condition of the motor, of course.

Since this article will only cover motor and gearbox lubrication, let's start right downstairs on the main floor of our garage, where the trucks are garaged for the night when no service work is required. Promptly on the 2,000-mile period, or as near that

Here are the three pre-heating and settling tanks, located directly over the reclaimer shown above. . . . These help to make the job of the reclaimer a simple one.





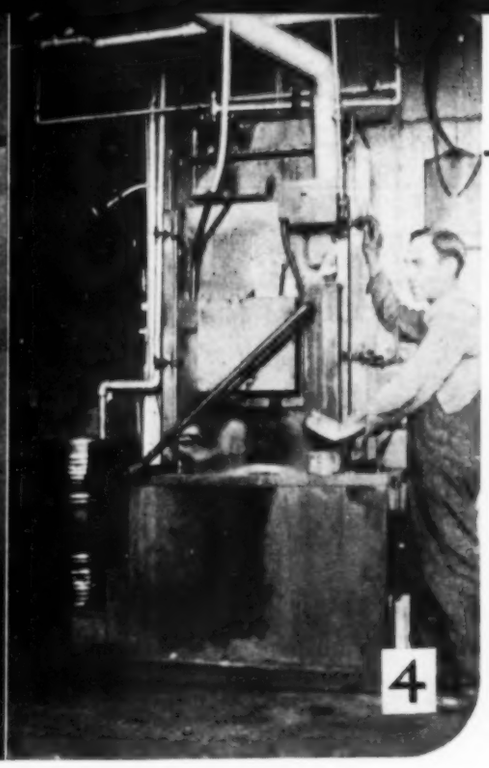


FIGURE 3 is another "trick gadget". The vertical tank is equipped with pet-cocks spaced every two inches apart, so that samples from any oil level can be drawn off easily, to check on "settling". . . . FIGURE 4 shows the oil reclaimer. Since this photo was taken, a new model of the same make was purchased.

• THE • COMMON • PROBLEM • OF • LUBRICATION?

By A. Maintenance Mann,

(Who Operates a 100-Truck Fleet in Pennsylvania)

mark as possible, each vehicle is run over a well-screened drain in the floor and the plug pulled out of the crankcase. The oil dribbles down and is caught in the drain, to be led (with gravity's kind assistance) to a 500-gallon tank in the basement below, where it is allowed to settle for an indefinite period. The truck is then refilled, goes out into service the next day, and is forgotten about for the time being—that is, so far as this article is concerned.

Sooner or later (from a sight-gauge on the tank) we'll discover that we have a heluva lot of crankcase drainings on hand. What to do next? We've already thought of *that*. Our basement tank is piped directly up to the seventh floor of our building, the piping then running through the floor and breaking through to the ceiling of the floor below (the sixth) where it is connected, by means of a lot of plumbing work, to the three settling tanks shown in the picture, Figure 5. These three tanks (in case you can't visualize it in the picture) are suspended from the ceiling. Right below them is the oil reclaimer, shown separately in Figure 4. The sixth floor, incidentally, houses our general repair shops and stock-room.

Some bright soul will no doubt ask, "How do you get the oil up from the basement, to the seventh floor?" The answer is simple; we have our air-compressor in the basement—always working and squeezing together plenty of air, which is piped *everywhere* in the building. So when we want to get our used crankcase oil up to the settling tanks, we simply close the inlet valve, open the outlet valve, and turn on the air-pressure, since an air-line is permanently attached to the used oil tank.

Thus, you see, we simply "press the middle valve down, the oil goes 'round and 'round, and it comes out there". Since the capacity of the three settling tanks is somewhat greater than the storage tank in the basement, there's no chance of any overflow, or other major catastrophies. The *round* settling tank holds 300 gallons and the two square ones hold 200 gallons each. These are shown in Figure 5, and although they don't look so big in the picture, that's the capacity, so help me!

While you are still looking at Figure 5, you will observe that each of these settling tanks is equipped with a thermometer and a glass sight-gauge. What are *they* for? We'll tell you. Quite a long time ago we found out, to our own satisfaction, that we could simplify the job of our oil reclaimer by allowing our

(Please turn to page 22)

And here is the "laboratory" in which many of this particular fleet operator's oil tests are made. . . . Looks very much like a gas-stove and a sink to us.

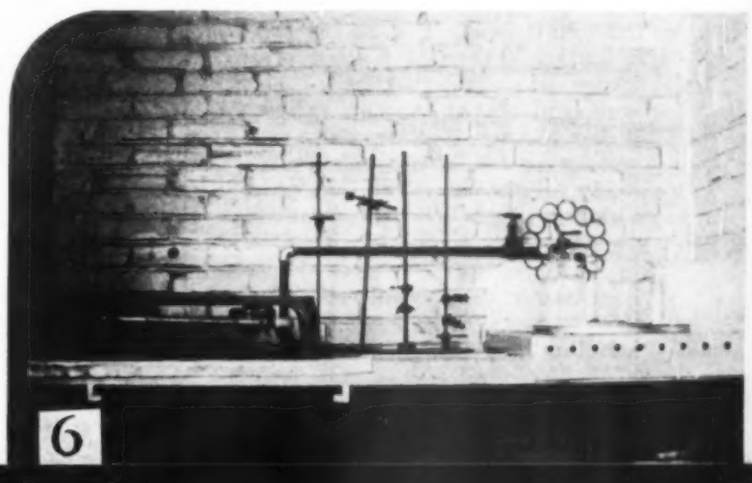


TABLE A

1935 MOTOR OIL REPORT—NEW OIL and RECLAIMED OIL

Source of Supply	No. of Gal.	Avg. Cost per Gal.	Total Cost
Company A	1,587	.54	$ 856.98
Company B	713	.366	260.96
Company C	391	.535	209.19
Company D	110	.65	71.50
Total New Oil	2,801	.499 (Avg.)	$1,398.63
Oil Reclaimed	1,419	.15	212.85
Total All Oil	4,220	.381 (Avg.)	$1,611.48
Total Cost of New and Reclaimed Oil figured at average cost of new oil.	4,220	.499	$2,105.80
Actual Cost of New and Reclaimed Oil	4,220	.381	$1,611.48
Net Saving in 1935 Credited to Oil Reclaimer			$ 494.32

used oil to *settle* for some time, so that the heavy foreign bodies could precipitate to the bottom. We also found out that if we reduced the viscosity of these used oils, the settling would be more thorough and much more of the heavy stuff would have a chance to settle down.

Therefore, in building these settling tanks, we had large steam coils incorporated into their construction. And where do we get the steam? Quite conveniently, there happens to be a steam laundry located in our building, and the steam is always there for the asking —or should we say for the taking?

So, after our used oil is pumped up to the settling tanks, and allowed to settle there for several days (time doesn't mean a thing with this proposition—the more the better) we press down another valve; the steam goes 'round and 'round for about 24 hours, and it comes out "there"—right back into the laundry's condenser tanks; or something. The thermometers on each of the settling tanks tell us how hot the oil gets —it usually runs around 160 to 180 degrees Fahrenheit. The glass sight-gauges are for the same purpose as those on the coffee-urns you've seen in coffee-shops. (But perhaps you don't eat in coffee-shops?)

And now for the "take-off" to the reclaimer. Naturally, after the oil has been heated and "settled", it would be folly to run *all* of it through the reclaimer, so our three tanks are tapped at a level seven inches above the bottom of each tank, and all but the bottom seven inches of each tank are fed to the reclaimer; when, as and if it is ready for the job. The task of arranging all of the miscellaneous piping was well thought out in advance, and we are able to handle our used crankcase oil in this manner with a minimum of handling and other incidental expense. "Untouched by human hands" would be a good slogan here, but this is no bakery fleet.

In case you are wondering what we do with the *bottom* seven inches of oil in each tank—the oil in which all the "settlin's" have settled—believe it or not, *we send it out to be reclaimed*, by a commercial reclaimer. Thus there is no waste.

Recently, we purchased a later model of the reclaimer shown in the picture, Figure 4. This is a "continuous-type" machine, and gravity again helps to "feed" this piece of equipment with old oil to clean. The capacity of our new reclaimer is about 24 gallons per 24-hour day. It is fully automatic and can operate for 24 hours, with about one hour each day "time out" for changing elements and other servicing of the machine.

The particular reclaimer which we are using does a very satisfactory job and it also provides for the collection of the "lighter ends" which we use as a penetrating oil for general work around the shop. The average cost of our reclaiming, figuring in *all* items of expense, labor, overhead and interest on the investment, runs around 15¢ per gallon—and even as low as 12½¢ per gallon. But 15¢ is a good average figure.

Table A, which accompanies this article, gives a full and complete report of our new oil purchases and our reclaiming data for the year of 1935. You will note that there was a net saving, during 1935, directly traceable to the use of the oil reclaimer, of $494.32. This is arrived at, using the net average figure of our new oil purchases (cost per gallon) as a basis, showing the saving made over what we might have paid, had we discarded our used oil and bought all new oil at the same average prices.

As to whether or not our reclaimed oil is satisfactory, please give us the benefit of any doubt which might exist in your minds. We have been reclaiming our oil continuously since 1930 and have had

(*Please turn to page* 24)

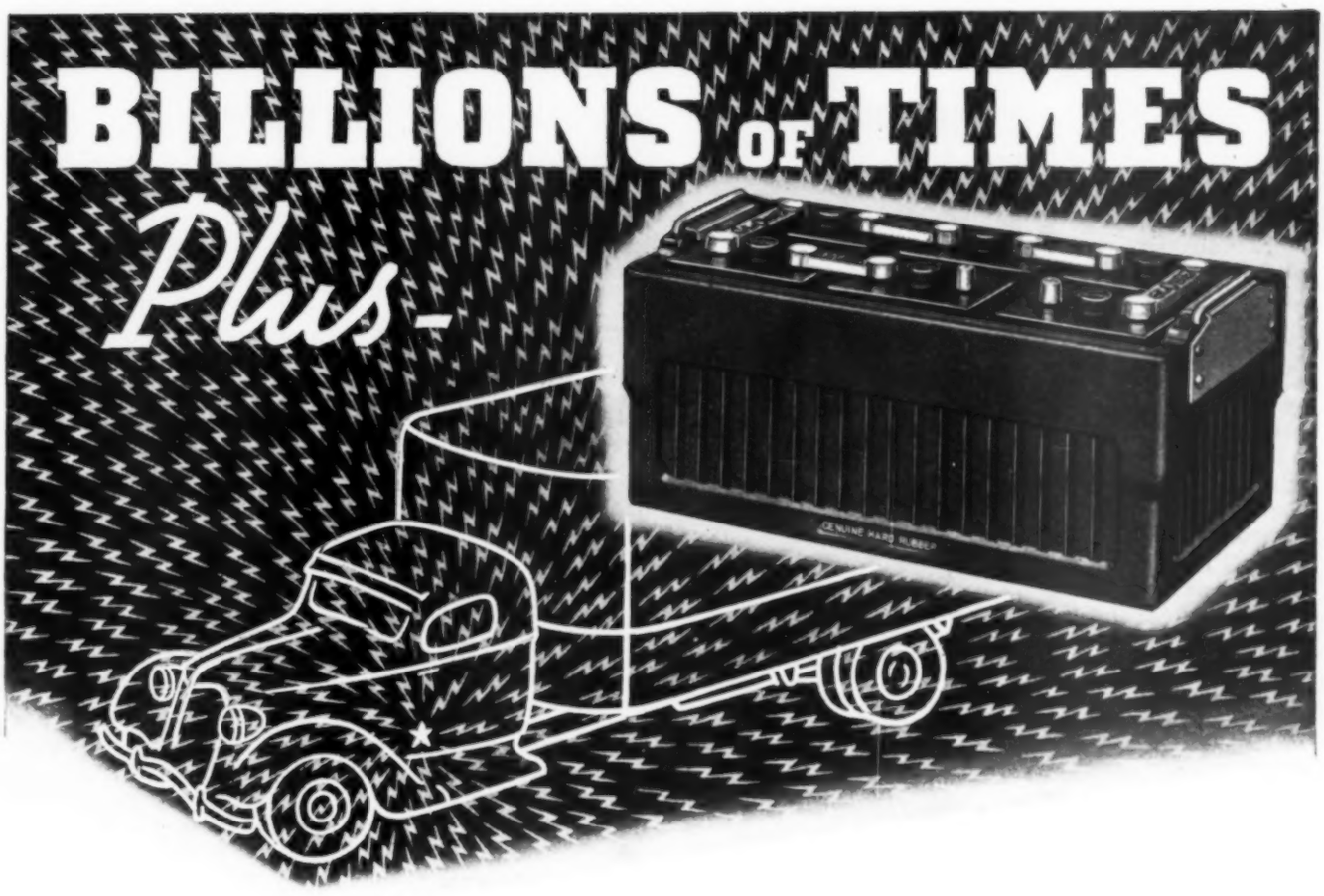
TABLE B

MOTOR OIL REPORT, 1929-1935—NEW OIL AND RECLAIMED OIL

Year	Months	Gallons	Cost	Avg. Cost per Gal.	Remarks
1929	12	9,566	$4,052.43	.423	No Reclaimer Used
1930	12	7,236	2,843.57	.392	Reclaimed 9 Mo.
1931	12	7,143	1,995.00	.279	Reclaimed 12 Mo.
1932	12	7,715	2,221.01	.287	Reclaimed 12 Mo.
1933	12	7,151	2,528.33	.353	Reclaimed 12 Mo.
1934	12	7,194½	2,593.73	.365	Reclaimed 10 Mo.
*1935	12	4,220	1,611.48	.381	Reclaimed 7 Mo.

* **Note:** During 1935 approximately the same number of vehicles were used, and ran about the same mileage as in 1934. The decrease in oil consumption is due to having extended oil-change periods from 500-1000 miles, to 2,000 miles. All vehicles were equipped with oil-filters in 1935, which fact permitted the longer use of the oil with safety. The saving, due to oil-filters, is $982.25.

BILLIONS OF TIMES *Plus-*



YES, it takes billions of rugged electrical flashes to operate a truck motor for a year. Think of it! — to go 75,000 miles the average 6-cylinder truck motor must fire 1,978,200,000 times. Boost the mileage to 100,000 — and you boost the hot sparks needed to 2,637,600,000!

But that's not all. The truck battery must furnish thousands of quick starts, as well as ample power for head lamps, tail lights and a dozen or so protective lights. A truck battery sure has to have plenty of *guts!* That's why Globe makes its Heavy Duty Battery — a battery with the "PLUS" that can stand the gaff — stand the tough grind of trucks and buses in the long hours and endless days and nights of fleet service.

The result! — long, powerful life, low maintenance cost, fewer replacements, and lasting satisfaction for fleet owners. Equip your fleet with Globe HEAVY DUTY Batteries — and send for the Globe "Battery Service Manual" — for better battery performance and maintenance.

Ask Your Dealer or Send in the Coupon

GLOBE-UNION MFG. COMPANY, Milwaukee, Wisconsin

8 Factories, 6 Branches — Thousands of Dealers

Globe "Full-Spark" Plugs are building new standards of heavy duty spark plug performance for fleet operators. Ask for specific recommendations.

"SPINNING POWER IS STARTING POWER"

GLOBE BATTERIES

AUTOMOTIVE - HEAVY DUTY - RADIO - POWER & LIGHT

GLOBE-UNION MFG. CO., Milwaukee, Wis.

☐ Send details about Globe "Full-Spark" Plugs

☐ Please send Service Manual and full information on Globe Heavy Duty Batteries

Name.....

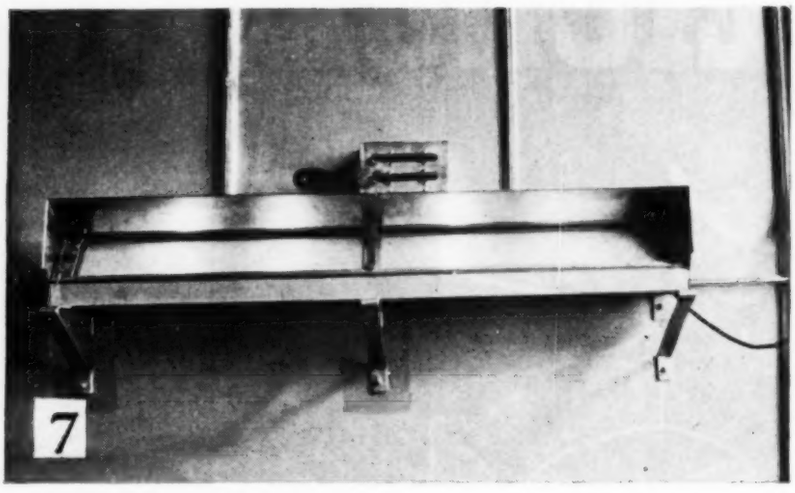
Firm.....

Address.....

City and State..... FO-4

chemical analyses made from time to time by reputable petroleum chemists. In addition to that, our actual testing of this reclaimed oil, over this period of years, in our fleet of trucks, has provided the proof of this tasty bit of pudding.

In some of the illustrations which accompany this article (Figures 1, 2, 3, 6 and 7) we have attempted to show the great lengths to which we go, in making various checks and tests—not only on oil that has been reclaimed, but on oils in the process of use in motors. This latter work is done regularly on different vehicles in the fleet.



And here is the special light projector for inspecting oil in test-tubes on the sample rack shown in Figure 1. This device can be placed behind any row of tubes on the rack, or it can be used as it is shown here, for separate tubes. A reflecting mirror and several light bulbs do the trick.

Note particularly the large sample rack (Figure 1) containing hundreds of glass test-tubes, each of which is numbered and dated, subsequently to be sent out for analysis, or to be compared with future drainings, reclaimings, etc., by our own methods of comparison.

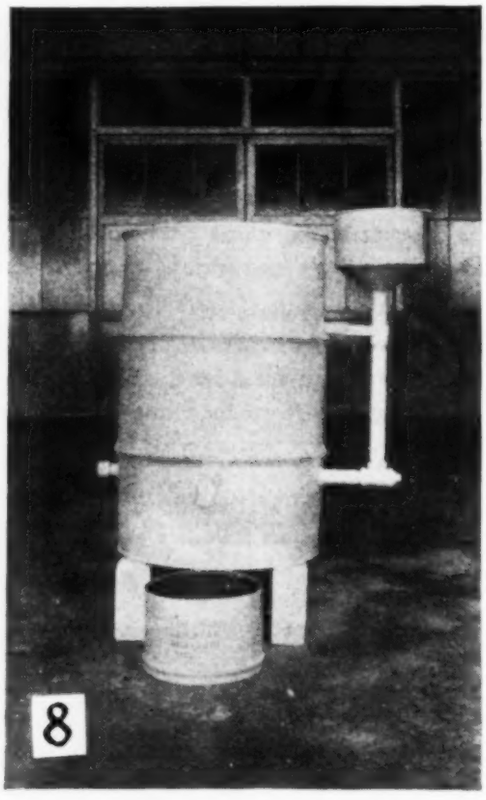
The special light projector (Figure 7) consists of an electric light and mirror, which can be placed behind any row of tubes on the test-rack, or which can be used separately. This device throws the necessary amount of light directly behind the oil in the tubes, thus making easy a "visual" test for color, precipitation, sediment, etc.

Another device which we use for checking clarity of oil is a factory-made "electric eye" which is a device that looks something like a check-protector. This has a glass slide on which the oil sample is placed. The slide is projected into the body of the "electric eye" and current is applied, furnished by a self-contained flashlight battery. By means of a rheostat and a sensitive electrical meter of some kind, the actual condition of the oil is registered on a dial, which reads "Dirty", "Fair" and "Clean".

We realize that this test doesn't mean *everything;* but it *does* give us some idea of how long the oil will stay clean in an engine; it also helps us in our tests which we are constantly conducting to determine the relative efficiency of the various oil-filters.

While on the subject of oil-filters, it might be in order to state that we have purchased one or more of practically *every* different oil-filter on the market. During the year of 1934 (and since then, too) we have made exhaustive tests of these oil-filters, putting them to work on the various vehicles in our fleet and keeping *accurate* records. From these tests we have been able to draw certain very definite conclusions as to just which oil-filter is best for our particular requirements. And the answer is that we are equipping our entire fleet with this make of oil-filter, just as fast as convenient and practicable.

Some fleet operators have been sold on the idea that the mere use of oil-filters is all one requires, in order to get efficient and economical lubrication service. We do not stop there, however. We think that oil-filters are swell and that they do a marvelous job. In fact, Table B, which accompanies this article, will give you an idea of the money that oil-filters have saved for us in 1935. The amount is around a thousand dollars—$982.25, to be exact.



This is the transmission and rear-end lubricant "reclaimer". . . . The accompanying article tells just how it is used. . . . We are not so crazy about the idea, however.—Editor.

When referring to Table B (on page 22) please remember that in 1934 relatively few of our vehicles were equipped with oil-filters. In 1935 *all* of them had oil-filters. During each of these years we operated about the same number of vehicles and our operating conditions and mileages were about the same, as well. The saving of $982.25 which we enjoyed in 1935 is directly traceable to the universal use of oil-filters, because by using them, we were able to lengthen the period between oil changes from 500-1,000 miles, to a flat figure of 2,000 miles. In addition to that, our oil reclaimer's job was lightened somewhat, because there was not so much oil to reclaim, as in 1934 when very few oil-filters

(*Please turn to page* 70)

"I am Saving Hundreds of Dollars Every Year," says Chevrolet Truck Fleet Owner

CHEVROLET
FOR ECONOMICAL TRANSPORTATION

NEW PERFECTED HYDRAULIC BRAKES
always equalized for quick, unswerving, "straight line" stops

NEW FULL-TRIMMED DE LUXE CAB

with clear-vision instrument panel for safe control

SOUTHERN BREWING COMPANY, Houston, Texas, is another truck fleet owner that has learned by experience and comparison of the outstanding advantages and economy offered by Chevrolet trucks. Mr. Carl R. Allen, who has personal supervision of this company's truck equipment, says:

"Approximately 1,000,000 miles of hauling (7,000 pounds per unit on 5 trucks) has convinced me that I am saving hundreds of dollars each year by standardizing on Chevrolet after trying competitive makes on the same hauls, over the same roads.

"Chevrolet truck No. 4 completed 110,000 miles of service with only one valve grind job and no other mechanical work except minor adjustments.

"Chevrolet truck No. 3—80,000 miles—with an expenditure of $25.00 for parts and service.

"I am averaging 12.6 miles per gallon of gas; changing oil every 1,000 miles—and I have never added a quart between drains."

Join the hundreds of fleet owners who are gaining similar results from their Chevrolet trucks—the *world's thriftiest high-powered trucks!* See or phone your Chevrolet dealer for the demonstration that will convince you that *low-priced* Chevrolet trucks lead in power, economy and dependability.

CHEVROLET MOTOR COMPANY, DETROIT, MICHIGAN

NEW HIGH-COMPRESSION VALVE-IN-HEAD ENGINE
with increased horsepower, increased torque, greater economy in gas and oil

FULL-FLOATING REAR AXLE
with barrel type wheel bearings on 1½-ton models

GENERAL MOTORS INSTALLMENT PLAN—MONTHLY PAYMENTS TO SUIT YOUR PURSE

CHEVROLET TRUCKS

An Interview with
Bill Churchill, Supt. Equip.,
Washington Motor Coach System, Ellensburg, Wash.

Guy Barnes, Shop Foreman of the Washington Motor Coach System (right) designed and built this valuable wrecking unit. . . . Clyde Smith, driver, is shown at the left.

Two Giant Wreckers Speed-Up Bus Schedules

This rear view of the new wrecker unit reveals the interesting design. Note the floodlight, towing hooks, clearance lights, and particularly the air-brake extension line, for braking towed buses.

"GET there on Time", is the motto of all motor transportation systems. And what a headache it means to the superintendents of equipment of the many western carriers, when the mountainous highways are blocked with snow, stalled motor vehicles and other traffic obstructions.

W. W. "Bill" Churchill, Superintendent of Equipment for the Washington Motor Coach System, a concern which carries passengers and freight throughout Washington, into Portland, Oregon and as far east as Butte and Helena, Montana, has solved this problem through the installation of a patrol unit consisting of two giant wrecker trucks.

The latest addition to the fleet is a 5 ton FWD (four-wheel-drive) truck equipped with a completely enclosed wrecker body. The body was built at the Ellensburg, Washington Shop of the System under the supervision of Guy Barnes, foreman.

The new wrecker is powered by a 125 h. p. motor, has a gear ratio of 5.65 to 1 and can attain a top speed of 56 miles per hour. It is equipped with a heavy duty winch, hoist and derrick plus all wrecking appurtenances. The cab is sealed against carbon monoxide.

In addition to all of these facilities, the wrecking-truck has a motor-driven air-compressor and an air line is extended back to the rear of the frame, to connect with and operate the air brakes on large busses being towed in to the terminal for repairs.

The other wrecker is a four ton FWD, which, equipped with a "V" snow plow, is kept in continuous service during the winter months, patrolling the routes of the system in Western Montana and Idaho.

According to "Bill" Churchill, these two giant wrecker units have not only helped fulfill their motto of "Get there on Time", but have also rendered valuable aid to other highway users, such as private cars and transport trucks when in distress.

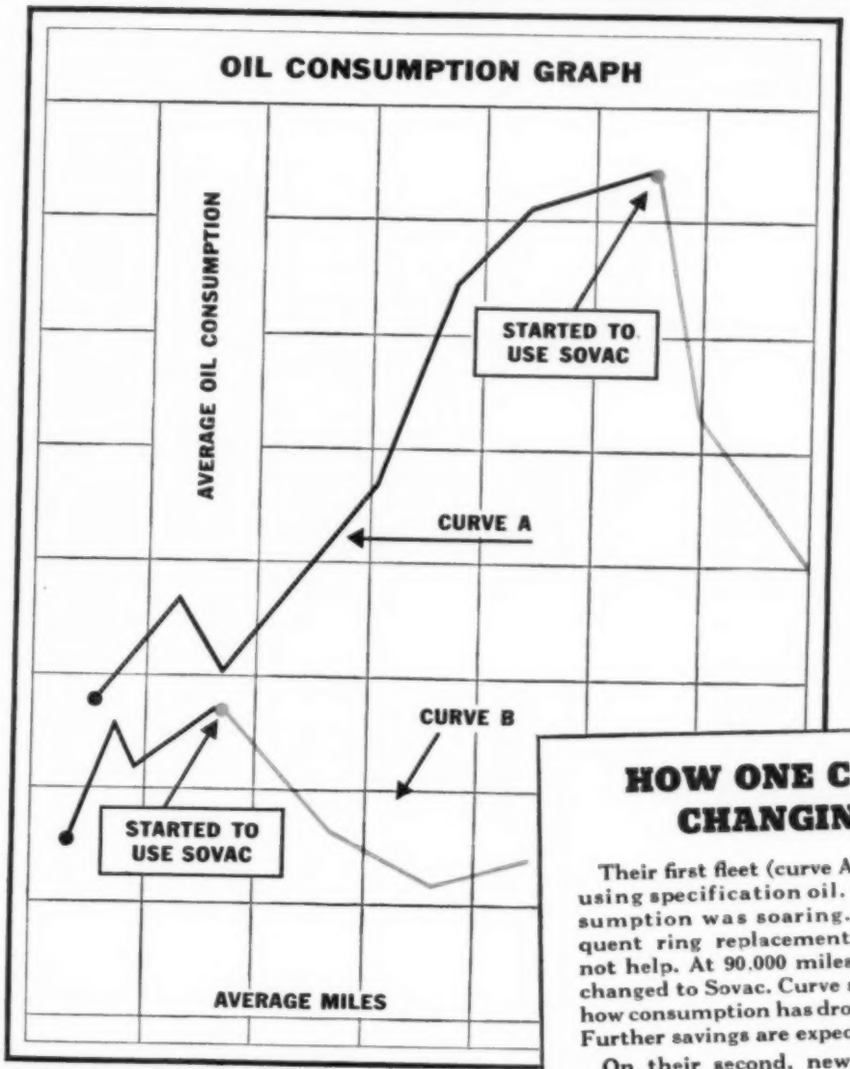
The Washington Motor Coach System, operators of busses and freight trucks in Western States often sends out this huge wrecker to clear the highways, under varying circumstances.

The complete wrecker body was built at the Ellensburg, Washington Shop of the System, under the supervision of Guy Barnes, foreman, shown at the right of Clyde Smith, mechanic, who drives the wrecker in road service.

The rear view of this wrecker unit shows the wrecking equipment and interior of body.

You can't be sure of "LOWEST COST PER MILE" until you've used Sovac Truck Oils

Most Sovac users changed from other oils . . . profit by their experience



A SOCONY-VACUUM ENGINEER, experienced in fleet lubrication, will be glad to show you economies with Sovac like those above on operations similar to your own.

WE'VE TALKED with a lot of operators who say, "One good oil is about the same as another."

The fact is—operators are changing to Sovac because service tests prove it saves gasoline, oil, and cuts maintenance costs in competition with other high-grade fleet oils.

These operators are in your business. Where they save you can save! "Changing to Sovac" is a check on your costs you can't afford to overlook!

Here are the reasons for Sovac's great economy: It's made by Socony-Vacuum's famous Clearosol Process which removes gum and carbon-forming elements. It has extra "oiliness." It has an unusually flat viscosity curve which means less friction drag and more protection at operating temperatures. Write to us today for full details.

HOW ONE COMPANY SAVED BY CHANGING TO SOVAC OIL

Their first fleet (curve A) was using specification oil. Consumption was soaring. Frequent ring replacements did not help. At 90,000 miles they changed to Sovac. Curve shows how consumption has dropped. Further savings are expected.

On their second, new fleet (curve B) this company used what several leading oil companies submitted as their choice of an ideal lubricant for this type of equipment. Again, when Sovac was introduced, marked economies resulted.

In all, there were eighteen identical vehicles used in this test. In both fleet A and fleet B there was a distinct improvement in engine condition after the change to Sovac Oil.

SOCONY-VACUUM OIL CO., INC.

STANDARD OIL OF NEW YORK DIVISION · WHITE STAR DIVISION · LUBRITE DIVISION · WHITE EAGLE DIVISION
WADHAMS OIL COMPANY · MAGNOLIA PETROLEUM COMPANY · GENERAL PETROLEUM CORPORATION OF CALIFORNIA

SOCONY-VACUUM

Starting a New
BREWERY FLEET
from "Scratch"

IN the beginning of 1934, a very interesting and significant advertising campaign was inaugurated in Cleveland, Ohio. By radio, car-cards, billboards, electric signs, and repeated newspaper copy, people of Cleveland and Cuyahoga County were continually informed that "Leisy's is back," meaning, of course, that the noted brewery founded by Isaac Leisy seventy-two years previously was to resume operations with H. F. Leisy, grandson of the founder, as president.

Later in May, 1934, after properly aged Leisy's beer was placed on sale, a standardized fleet of twenty-six attractively finished motor trucks equipped with musical horns that repeatedly toot a familiar phrase from the significant song, "How Dry I am," also figured most prominently in the continuation of this comprehensive advertising campaign. This article will deal more particularly about this fleet and its management and operation.

The tune, "How Dry I Am," sounded on the musical horns of all Leisy's trucks, by the way serves also as Leisy's radio theme-song. During the summer season Leisy's conducts a daily sports program over the radio, which includes broadcasts of all ball games. So often do the people of Cleveland and environs hear this suggestive musical phrase as the trucks daily dash here, there, and practically everywhere in the community and also as they receive their daily sports news by radio, that it very naturally has a subtle association with the consumption of the Leisy product. Incidentally, in all this advertising the word "Leisy" or "Leisy's" is featured, the word beer being seldom mentioned.

Preparations for the resumption of the manufacture of Leisy's beer were unusually thorough. Under the direct charge of E. L. Johnson, vice-president in charge of sales and D. B. Lord, vice-president in charge of maintenance, (prominent Cleveland business men who became associated with Mr. Leisy) these preparations went on apace. All plant equipment had been sold after prohibition went into effect and so before the production of beer could be resumed, a variety of up-to-date equipment, including huge glass-lined tanks and the latest in conveyors, coolers, bottling machinery, etc., had to be installed.

In all these preparations, the importance of an adequate fleet of delivery units for the distribution of Leisy's beer manned by carefully trained driver-sales-

ONE of two 1½-ton panel jobs recently added to the Leisy fleet. In all, seven panel-body trucks serve for case and container delivery, five being of greater capacity than this new streamlined unit.

TEN of Leisy's 2-tonners have special flare-board bodies of this type. These units are used for both case and keg delivery service. The drop door, resting on the curb, provides for easy removal.

An Interview with
E. L. Johnson,
Vice-President
The Leisy Brewing Co.
Cleveland, Ohio

men and supervised by a competent fleet superintendent, was realized by Mr. Johnson in laying his selling and also his advertising plans.

Twenty-three of the 26 vehicles originally selected are of the 2-ton, six-cylinder type with 170-inch wheelbase, for frequent-stop city deliveries; two are of fast-moving 3-ton, six-cylinder type with 210-inch wheelbase, for suburban deliveries; and one is of ¾-ton, four-cylinder, for special delivery service such as filling special orders, delivering to picnics and supplying other trucks. More recently, two new-type streamlined 1½-ton, four-cylinder units were added to the fleet; these are also utilized in special delivery service. Thus, the Leisy fleet now consists of twenty-eight standardized units, all of International manufacture.

R. L. Case, who has had years of training in servicing trucks and dealing with truck drivers was chosen as fleet superintendent. He has been most successful in obtaining the full cooperation and good will of the driver-salesmen as well as of his mechanical staff and thus having the fleet operate at high efficiency at all times. Shortly after the Leisy fleet had been operated a year, Mr. Case reported as follows:

"We are averaging better than seven miles to the gallon of gasoline, which we think is excellent, considering that the trucks are used mainly for city delivery and most of them in congested districts where hundreds of stops and starts per day are required. We change the motor oil every one-thousand miles and never add any between changes, even when using SAE No. 20 oil.

"We have covered over 320,000 miles to date which makes an average of 12,000 miles per truck and have had no repair work done except minor adjustments. The actual mileage per truck varies from 8,000 to 28,000 miles, speedometer reading, depending on routes covered. So far we have not replaced a single tire and do not expect to until next year (1936)."

Three types of bodies are utilized in the Leisy fleet of trucks. Of the twenty-three 2-ton models, eight are equipped with roll-type keg bodies, 11 feet long and 58 inches wide, which are employed on the heavier keg routes. With these bodies, a driver can grab a keg anywhere from the side and drop it off on a heavy pad. Forty half-barrels may be loaded on one of these roll-off bodies, a middle row on end and three tiers sidewise on each side.

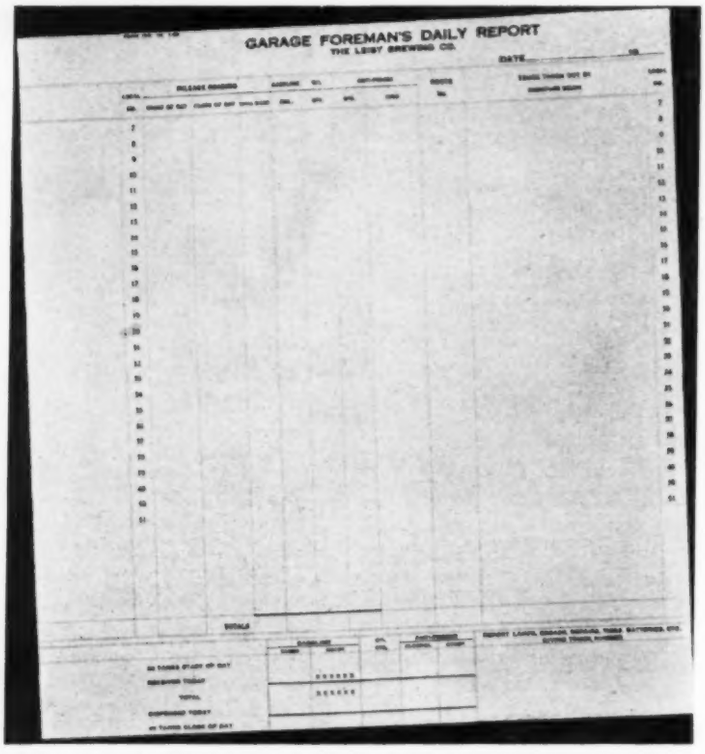
Five of these 2-ton units are equipped with panel bodies, which are for the heavier case routes. Panel bodies are used to prevent theft and also for weather protection. The side panels also provide valuable space for advertising the firm's name, "Leisy's" being printed in each panel in big block letters which are standard in all Leisy advertising. Sliding doors on the sides as well as double doors in the rear provide easy access to any part of the load which may be made up of several kinds of beer.

The remaining ten 2-tonners are provided with flare-board open bodies, 12 feet long and 5 feet wide, which are used on combination keg and case routes. Each flare-board body will hold 55 half-barrels or 150 cases. Near the front, on each side of these flare-board bodies, is a drop-door which, when it rests on the curb, serves as a rollway for the easy removal of kegs or cases. Here again, a load may be made up of light and dark beer, and by having easy access to the load from either side as well as from the rear, the driver does not have to be continually shifting his load or climbing all over it to find what he wants to deliver at a particular place. The two 3-ton jobs and the ¾-ton special delivery unit are also equipped with this same type of flare-board body with special side doors.

The two new streamlined 1½-ton trucks are equipped with 9-foot panel bodies and were purchased primarily to facilitate the distribution of Leisy beer in special four-gallon or ⅛-barrel containers, called "growlers," which are built in the form of an inverted oaken bucket with air valve and spigot in the bottom. These growlers serve especially well for home parties and for picnics. They are continually being advertised over the radio and deliveries are made any time up to midnight. One of the trucks covers the east side and the other the west side of Cleveland and an adequate supply of these growlers is carried on each trip to take care of orders soon after received.

Each driver calls up the brewery every half hour while en route to check up on such orders in his territory and thus can make quick deliveries from his supply of extras. The beer in each growler is kept cool by dry ice in a paper container that sets on top of each growler. An insulated blanket is also utilized

(*Please turn to page* 30)


GARAGE FOREMAN'S DAILY REPORT
THE LEISY BREWING CO.

DATA on mileages, gasoline and oil consumption, repairs, etc., are recorded on this "Garage Foreman's Daily Report" which is made out in duplicate. The original, in white, is for the office, and the blue duplicate is for the garage file.

to cover the growlers while in transit. By the use of this dry ice and the blanket, the expense of refrigerated bodies has been obviated.

At the very beginning, said Mr. Johnson, they realized what an important role the various trucks in the Leisy fleet could play in the conduct of their advertising campaign as traveling billboards. Unusual care was accordingly exercised in the selection of distinctive colors in which to finish the trucks and of the advertising message printed on them. Cream and dark blue were the colors finally selected.

The trucks with roll-off keg bodies are finished as follows: The chassis, body, fenders, and lower part of the cab are blue, while the top of the hood, the top of the cab, and the wheels are cream colored. The word "Leisy's" is in big standard block letters on a name board with background of cream up in front at top of cab and also on each cab door. Below the name on each cab door is a reproduction of the company's trade mark similar to that which appears on each bottle label.

The same color and advertising motif appears on the flareboard and panel bodies. On the panel bodies, the cream color prevails from the belt line up and as previously mentioned in each side panel the single word "Leisy's" is printed in big letters, so big in fact that even a near-blind person could hardly miss it. Thus, with trucks that are attractive in appearance and with their horns continually playing that seductive phrase "How Dry I Am," Leisy's have built up a traveling advertising medium that is hard to beat.

The driver-salesmen are very carefully selected and supervised. With the exception of those operating the special delivery trucks, each driver has a helper. The men belong to a union and are insured and bonded and must submit to a physical examination before being hired. The antecedents of all men in regard to character and honesty must, of course, be carefully checked, for in the course of their daily work the drivers handle considerable sums of money. To prevent theft, each truck is provided with a heavy iron safe equipped with a slot with claws in which the drivers deposit money as it is collected enroute. There are two keys for each of these safes, one being held by the driver and the other by the cashier at the plant.

In the summer the men wear tan uniforms which are laundered three times a week at company expense. In the winter each is provided with a blue jacket with the word "Leisy" printed on the back. Both winter and summer caps are provided with Leisy monograms which also are placed on the pockets of the summer blouses. Leather aprons complete the ensemble. A locker is provided for each man and there are two showers, soap and towels being provided free of charge.

Meetings of driver-salesmen are frequently held at which talks on sales, safe driving practices, etc., are made. Mr. Case, the fleet superintendent, not only speaks often at these meetings but he also devotes a lot of his time in developing personal contacts with the men. To sustain the efficiency of his fleet and to keep maintenance costs down, Mr. Case significantly remarked, a fleet superintendent and his mechanics must keep on good terms with all the drivers, for without their good will they could very quickly "break" the man in charge.

Since the men who operate the trucks are primarily salesmen, they are not expected to do anything on the trucks except drive them. They are not even allowed to change tires, and at night when they come in all they do is drive the truck to the gas pump where the garage mechanic takes his place and receives a verbal report regarding anything that needs mechanical attention, fills the gas tank, and then drives the truck to its proper place in the modernly built and equipped garage which is 90 feet by 130 feet in size.

This procedure enables the mechanic to develop daily friendly contact with each driver and to put over many a worthwhile suggestion on proper driving; it also eliminates the need of written daily reports by drivers, which many drivers might find onerous and on which they might not record all the information the mechanic might desire.

The drivers appreciate the fact that their work is finished as soon as they come in and do not have the tedious job of parking in the garage. And the mechanic in turn, in the short time he is driving the truck to its place, can make a quick check of its operation, especially of brakes, clutch, and motor, and because of his greater mechanical skill and knowledge of trucks often notes things that need attention which the driver may have overlooked. Then, too, the mechanic develops a certain skill in parking which means the prevention of many a damaged fender.

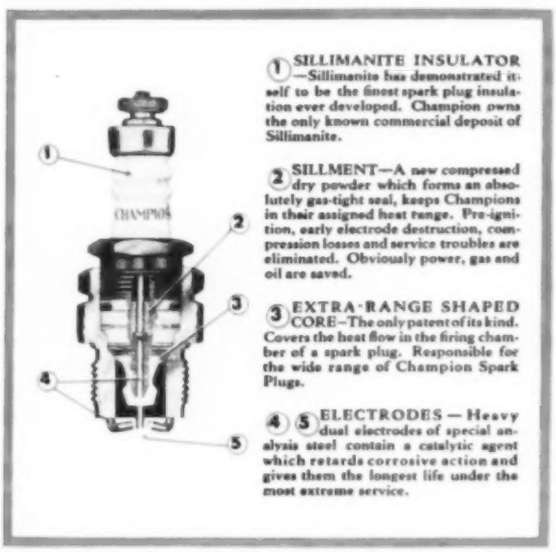
Dents in fenders, by the way, are absolutely taboo in the Leisy fleet, and if there is such a dent it is

(*Please turn to page* 72)

Champion has recently had the great satisfaction of perfecting, through the use of Sillment, a compressed dry powder seal, what is, to the best of our knowledge, the first completely and permanently gas-tight spark plug.

Years of constant research are back of this single advance, but it is only one of a score of similar developments in the last 26 years. All have involved great investments of time and money, in many arts and sciences, human skill and ingenuity, manufacturing and engineering equipment. The sole purpose of this is that Champions will give every engine better, more economical and more dependable performance.

Judge spark plugs by who uses them and you will unerringly choose Champions. Since Champion's introduction they have enjoyed an ever-growing preference among fleet owners and the majority of the world's motorists, while over 600 makes of spark plugs have appeared on, and disappeared from the market. Today the majority of American automotive engineers as well as fleet owners specify Champion Spark Plugs.


1 SILLIMANITE INSULATOR —Sillimanite has demonstrated itself to be the finest spark plug insulation ever developed. Champion owns the only known commercial deposit of Sillimanite.
2 SILLMENT—A new compressed dry powder which forms an absolutely gas-tight seal, keeps Champions in their assigned heat range. Pre-ignition, early electrode destruction, compression losses and service troubles are eliminated. Obviously power, gas and oil are saved.
3 EXTRA-RANGE SHAPED CORE—The only patent of its kind. Covers the heat flow in the firing chamber of a spark plug. Responsible for the wide range of Champion Spark Plugs.
4 5 ELECTRODES — Heavy dual electrodes of special analysis steel contain a catalytic agent which retards corrosive action and gives them the longest life under the most extreme service.

Champion

EXTRA-RANGE SPARK PLUGS

TO KEEP ENGINES YOUNG, TEST CLEAN AND REPLACE SPARK PLUGS AT REGULAR INTERVALS

Type of Truck Fleet*	1934-35 Accident Rate	Percentage Change from 1933-34 to 1934-35
All Fleets	3.34	Dec. 8%
Inter-city trucking	1.69	" 6%
Public Utility	2.57	" 13%
Dairy	2.77	" 12%
Petroleum	3.14	" 4%
City Trucking	3.19	" 15%
Laundry	3.58	Inc. 1%
Bakery	3.69	Dec. 11%
Department Store, etc.	4.38	Inc. 5%

* Separate figures given only for those groups where 1,000 or more trucks were reported.

1935 ACCIDENT IN FLEET

REPORTS of the National Safety Council on the accident experience of the commercial vehicle fleets during the fiscal year ending June 30, 1935, show that large fleets had a higher average accident rate than during the year ending June 30, 1934; small fleets, however, showed an improvement over the previous year.

Reports have been received by the Council from 1,073 fleets, operating 53,000 vehicles, which covered 860,000,000 miles during the fiscal year, and averaged 2.78 reportable accidents per hundred thousand miles.

A "reportable" accident is any accident in which the vehicle is involved (unless properly parked) which results in death, personal injury, or property damage, regardless of who was hurt, what property was damaged, or who was responsible.

For accuracy in comparison of accident rates, only such fleets are considered each year as have reported their accident experience to the Council during the two consecutive years.

The reduction in the average accident rate for vehicles of all types is due to improvement by passenger car and truck drivers; rates for bus drivers increased 15 per cent over the previous fiscal year.

The 1934-35 accident rate of 2.78 for all fleets is based on the largest coverage of commercial vehicle accident experience ever reported to the National Safety Council. For the first time, the total number of reported units exceeds 1,000. The total number of vehicles passed the 50,000 mark, and the total exposure reached almost 900,000,000 miles. These gains are due to more reports from passenger car and truck fleets.

The 1934-35 accident rate is 44 per cent below 1930. The improvement in experience over 1933-34, however, was small, amounting to only 3 per cent. If large fleets had equalled the records of smaller ones the general rate would have been lower, as shown by the following tabulation:

Size of Fleet	1934-35 Accident Rate	Percentage Decrease from 1933-34 to 1934-35
All Fleets	2.78	3%
Large	2.83	2%
Middle-sized	2.56	9%
Small	2.74	4%

As in previous years, different types of vehicles had widely different accident rates. The lowest average rate during 1934-35 was made by passenger car drivers, who averaged 1.53. The rate for bus operators was considerably higher, 2.66, due to the high rates of fleets whose operations are within cities. Truck drivers had the highest average, 3.34, but they made the largest reduction, in comparison with the previous fiscal year.

The following tabulation shows that, while there was a decrease of 5 per cent in the rates for passenger car drivers, this improvement was largely offset in the general experience by a rise of 15 per cent in the rates for bus operators.

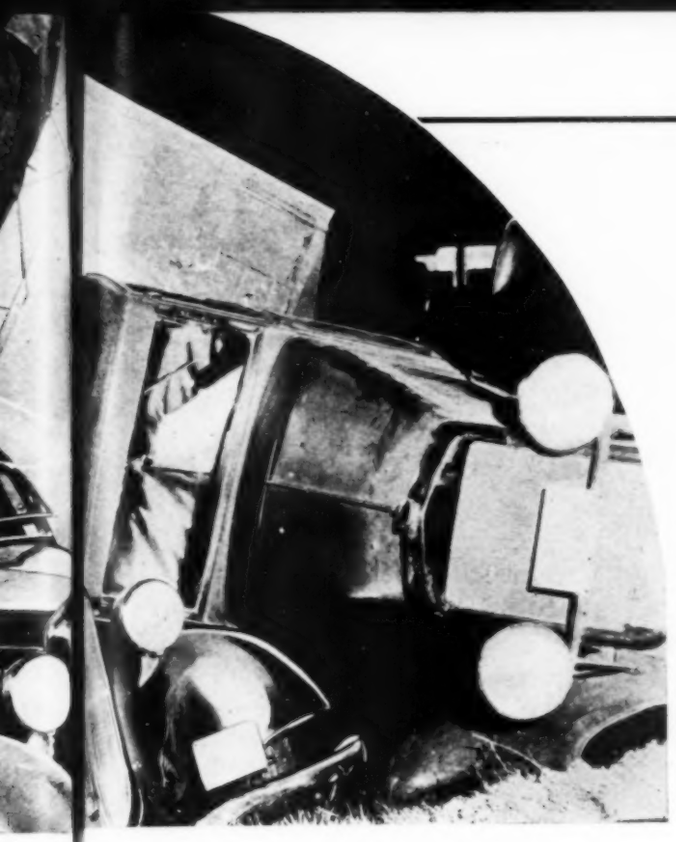
Type of Vehicle	1934-35 Accident Rate	Percentage Change from 1933-34 to 1934-35
All Vehicles	2.78	Dec. 3%
Passenger Car	1.53	Dec. 5%
Bus	2.66	Inc. 15%
Truck	3.44	Dec. 8%

The comparatively low 1934-35 rate of 1.53 for passenger car drivers was due, principally, to good records made by large fleets. Their rate of 1.51 was below the average for smaller passenger car fleets. In bus and truck fleets the situation was just the reverse.

The smallest passenger car units, however, made the largest improvement in accident rates over the previous year, 19 per cent. Middle-sized passenger car fleets had higher rates, which about offset the reductions by the smallest units. The decrease of 5 per cent for all fleets, therefore, is due largely to the improvement by large fleets.

Size of Fleet—Passenger Cars	1934-35 Accident Rate	Percentage Change from 1933-34 to 1934-35
All Fleets	1.53	Dec. 5%
Large	1.51	Dec. 6%
Middle-sized	1.64	Inc. 6%
Small	1.59	Dec. 19%

The 1934-35 accident experience of bus fleets was



EXPERIENCES OPERATION

OUTSTANDING NO-ACCIDENT RECORDS

(Best all-time records known to the National Safety Council)

Type of Fleet	Company	No-Accident Miles
Passenger Car	Gulf Companies (Ft. Worth Div.)	1,784,028
Inter-city Bus	Greyhound Management Co. (Indianapolis)	1,020,000
Laundry	South Shore Laundry, Chicago, Ill.	966,000
Inter-city Trucking	Columbus Motor Express, Inc., Columbus, O.	941,625
Meat Packing	Morgan Packing Co., Austin, Ind.	855,419
Misc. Mfg. Plants	Corn Products Refining Co., Edgewater, N. J.	784,480
Bakery	American Bread Company, Nashville, Tenn.	779,592
Newspaper	Columbus Citizen, Columbus, Ohio	711,959

not as satisfactory, in some respects, as the results achieved in other types of commercial vehicle transportation. While fleets engaged in inter-city bus transportation continued to operate more safely than any other type of vehicle, their rate of 1.16 is up 22 per cent over 1933-34. The rate of 6.03 for city bus fleets is higher than the rates for various kinds of truck fleets that are also subject to city traffic hazards, and is also ten per cent above 1933-34. However, this advance was less than one-half the rise which occurred in the average rate for inter-city operations.

Type of Bus Fleet	1934-35 Accident Rate	Percentage Increase from 1933-34 to 1934-35
All Fleets	2.66	15%
Inter-city	1.16	22%
City	6.03	10%

(*Please turn to page* 78)

ACCIDENT RATES OF COMMERCIAL VEHICLES, JULY 1934 TO JUNE 1935

GROUPS	No. of Fleets	No. of Vehicles	No. of Vehicle-Miles (000)	No. of Accidents	Rate
All MOTOR VEHICLE	1,073	52,933	859,660	23,921	2.78
PASSENGER CAR	175	11,811	197,755	3,033	1.53
BUS	64	3,465	180,015	4,784	2.66
Inter-city	39	1,829	124,712	1,449	1.16
City	25	1,636	55,303	3,335	6.03
TRUCKS	834	37,657	481,890	16,104	3.34
Building Materials	13	202	3,231	48	1.49
Inter-city Trucking	29	1,042	17,327	292	1.69
Public Utility	109	11,095	107,377	2,756	2.57
Ice	10	463	3,835	101	2.63
Dairy	35	2,238	25,885	717	2.77
Transfer and Storage	18	369	7,391	222	3.00
Petroleum	109	7,823	109,374	3,434	3.14
City Trucking	79	2,614	33,400	1,065	3.19
City and Inter-city Trucking	18	721	11,896	423	3.56
Laundry	87	1,660	18,841	675	3.58
Misc. Manufacturing Plants	59	795	8,641	309	3.69
Bakery	53	2,751	43,663	1,612	3.69
Meat Packing	32	974	18,944	742	3.92
Fuel	21	434	4,904	196	4.00
Department Store, etc.	104	2,714	40,053	1,756	4.38
Beverage	26	440	4,163	184	4.42
Newspaper	17	963	19,347	1,315	6.80
Coal and Ice	15	359	3,618	257	7.10

How 144 Fleets Recondition Cylinders

By H. Clay Fischer,
Editor, FLEET OWNER

IN an article on Cylinder Reconditioning, appearing in our April issue of this year, the statement was made that *"perhaps 85% of all cylinder reconditioning work today is done by means of a boring-bar, either in connection with a hone afterward, or simply by reboring the cylinders without honing"*. The author of that article might have clarified his remarks somewhat, and could have added the phrase, "among fleet operators", since apparently he was talking about cylinder reconditioning work in this branch of the automotive industry only. But he did not do so, and as a result, this figure was questioned by at least one authority, who claimed that in the *general* automotive field the picture was far different, and that a large portion of this work (far greater than the remaining 15%) was done by the use of cylinder hones only.

And that was the beginning of a controversy which prompted us to take up the subject in our Question-of-the-Month Club. The questionnaire on Cylinder Reconditioning (Number 68) appeared in our very next issue—May, 1936, and we have finally gotten around to tabulating the replies. Those who participated in it have by this time received their private and personal typewritten copies of the summary. Those who did not will have to be satisfied with this brief resumé of our findings, minus the trade-names and other confidential information:

Our first question was *"Do you recondition cylinders in your own shop or do you farm-out this work?"* . . . Out of our 144 replies, only 38 fleets do *all* of their own cylinder work, the survey revealed; 83 operators farm-out this work; 9 operators do some of their own and farm-out some of it; 13 fleets do not recondition at all, but exchange their engines or cylinder assemblies; and 1 operator has a standardized fleet in which he *replaces* the cylinder sleeves when they become worn.

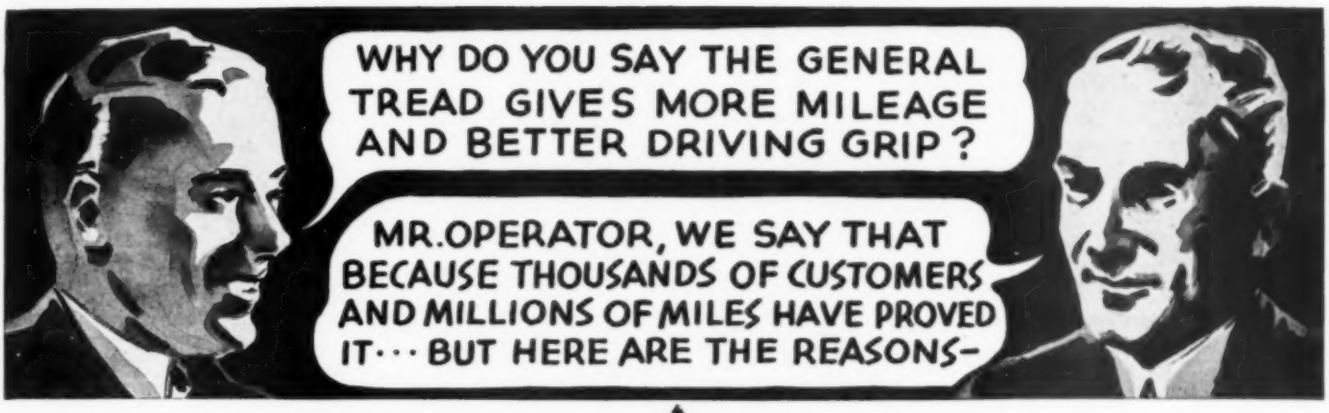
As to the advisibility of doing your own cylinder reconditioning work or farming it out, we will refrain from commenting; later on in this article you will run into some comparative cost figures, which show that it is probably cheaper to do it yourself if you have enough of it, so for the time being we'll say nothing more about it.

The second question asked *"If farmed-out, what type of firm does this work for you?"* . . . As in several other surveys of this kind, the automotive jobber seems to be getting most of this work, since the jobber was mentioned exclusively on 33 questionnaires out of our 92. The cylinder grinder came next, being mentioned exclusively 27 times. In this connection, it is often difficult to differentiate between the jobber and the cylinder grinder, since many jobbers are also cylinder grinders, and many cylinder grinders are also jobbers.

Other sources of supply on this work were mentioned as follows: Vehicle dealer or factory branch—8; Traveling mechanic—3; Garage or independent repair shop—3; Cylinder grinder and jobber—7; Cylinder grinder and vehicle dealer—2; Cylinder grinder and machine shop—2; Automotive jobber and vehicle dealer—4; Machine shops—3.

And now comes the controversial part of the questionnaire. We asked, *"What method or methods are used to recondition your cylinders?"* The power-

(*Please turn to page* 36)


WHY DO YOU SAY THE GENERAL TREAD GIVES MORE MILEAGE AND BETTER DRIVING GRIP?
MR. OPERATOR, WE SAY THAT BECAUSE THOUSANDS OF CUSTOMERS AND MILLIONS OF MILES HAVE PROVED IT··· BUT HERE ARE THE REASONS–

First the

sulphur and other ingredients used in General tread rubber are *the best money can buy.* No second grade materials, no fillers; nothing is added merely for weight or bulk or to reduce costs. Proper compounding makes this rubber tough to resist chipping like this and elastic like this to give long wear.

Second the design of the General Traction Tread gives better road grip because these square blocks set at 45° angle to the line of travel act like wedges when driven into the road surface. No slipping, sliding or spinning like this The surface does not "wipe" nor scuff unevenly like this but wears uniformly and evenly like this for these three reasons: . . . (1) the blocks are short and square . . . (2) there are dozens of blocks like this supporting and distributing the load at all times and . . . (3) each block over-laps half of every other block like this

THE GENERAL TIRE & RUBBER CO. • AKRON, OHIO

In Canada—The General Tire and Rubber Company of Canada, Limited, Toronto, Ontario

FREE! INFLATO-TABLE!

This inflato-table will tell you how much air to put in your tires. It will show you when your tires are overloaded. It will tell you how much load a certain size tire can carry with safety. *It's Free.* Go to your General Tire dealer and ask for yours.

GENERAL BUILDS a complete, highly specialized line of truck tires. GENERAL TIRE DEALERS are practical truck tire men with wide experience and accurate knowledge in fitting the right type and size of tire to every kind of job. THIS COMBINATION is worth real money to you. If your job is tough, call in the General Tire dealer and let him prove these statements.

GENERAL TRUCK TIRES

operated portable boring-bar led the field, being mentioned exclusively 58 times. Next to be mentioned exclusively was the large stationary cylinder grinder, which came in for 17 unanimous votes. The stationary grinder *and* the portable boring-bar claimed another 25 followers, meaning that they use the grinder for certain blocks, and the boring-bar for others—presumably the removable and the unremovable ones, respectively. Two more fleets use the stationary grinder and the cylinder hone—separately, we assume. Fifteen fleets mentioned using the portable boring-bar for the roughing-out operation and the hone for finishing; while but five operators reported using the cylinder hone *only*, as a method of cylinder reconditioning. The balance (22 fleets) did not answer.

THIS survey revealed, among other things, that most fleet operators seem to prefer the portable power-operated boring-bar for cylinder reconditioning. . . . The above illustration is typical of such equipment and there are several good makes on the market, sold usually through jobbers.

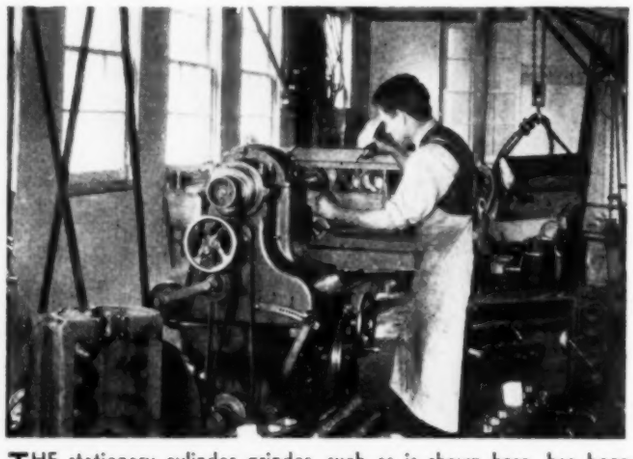
In order to leave no misinterpretations with regard to the previous question, we asked "*If a boring bar is used, do you use a hone or grinder for the finishing operation?*" Sixty-six fleets said "Yes"; five more replied "Sometimes"; seventeen operators said "No"; and 56 did not answer this one. The large amount of "no answers" is evidently due to the fact that most of this work is done outside and the operators do not seem to know whether a hone is used for cleaning up or not.

There seem to be two schools of thought along the above lines. One is that the entire job can be done by the boring-bar; the other is that the hone *must* be used in order to get the so-called "mirror finish". We shall not try to settle that question in these pages; that's something for you to learn for yourself by experience.

Still another school of thought leans towards the use of the cylinder hone only, as a reconditioning tool. Many people claim that they can do a good job with a hone, regardless of the condition of the block; others claim otherwise, and also that the hone is too slow for large cuts. There are a good many fine arguments, *pro* and *con*, on this subject, which we'll try to keep out of. The figures we are giving you here are simply the result of our "survey" on the subject, minus any "We-told-you-so" remarks on our part.

In order to get a general idea as to what types of boring-bars, hones or grinders are being used in fleet work, we asked for the makes, and also whether the boring-bars were of the single-blade or multiple-blade types; and if they were equipped with honing or grinding heads. Those fellows who worked with us on this questionnaire and were good enough to fill it out and return it, were suitably rewarded with their typewriten summaries, previously mentioned. In these we revealed the makes of equipment and other confidential information, which we shall not give you here; if we did, then there would be no "incentive" for anybody to participate in it.

It is interesting to note, however, that *one* make of portable boring-bar seemed to be more popular than all other cylinder reconditioning tools. If you can guess which make it was, that's o.k. with us. If you can't, and are willing to pledge yourself to cooperation in future questionnaires, we'll be glad to oblige you with a copy of the summary, on request. (This offer is made to fleet operators only). We regret very much that our editorial policy does not permit publishing the relative popularity of automotive products, as evidenced by our monthly surveys. But in the confidential summaries, sent only to participants, one gets *everything!*



THE stationary cylinder grinder, such as is shown here, has been the time-honored method of reconditioning cylinders. Many fleets still prefer this method, it having run a close second to the boring-bar in our survey.

With reference to the blades on the boring-bars, and the hone or grinder attachments, here is how the answers came in: Boring bars with multiple blades are used by 45 operators; with single blades—42; with hone attachments—20. Apparently many fleets are in close contact with the firms who do their reconditioning work, otherwise they would not be so familiar with the type of boring-bars used.

And now we come to

(*Please turn to page* 38)

HANDLE 10-TON LOADS WITH GREATER SPEED AND AT LOWER COST

Motor freight lines, warehousers and other users of heavy-duty trucks are changing from big, high-cost trucks to Ford V-8s. Experience has proved that Fords can handle these heavy loads, maintain faster schedules and reduce pick-up, delivery and hauling costs. Evidence of this is contained in a letter from U. S. Truck Company, Detroit.

"We were one of the first truck companies to use Ford V-8 Trucks on a large scale. The familiar sight of these smart, flexible Fords moving swiftly through the metropolitan district of Detroit, making deliveries to our customers in the morning and pick-ups during the late afternoon, caused considerable comment in shipping circles at the time. As Ford V-8 Trucks were improved, we absorbed more of the new types into our organization with the result that Ford V-8 Trucks have contributed considerably to our most successful year of operation. Their economy in oil and gasoline mileage is a great factor in reducing pick-up and delivery costs and their ability to handle 8- to 10-ton loads has made it possible for us to use our Fords to greater advantage and with greater speed as time goes on."

It is good business to find out what Ford V-8 Trucks can do for you. Call your Ford dealer today and set a date for an "on-the-job" test with your own loads, under your own operating conditions.

FORD ANNOUNCES NEW DE LUXE EQUIPMENT FOR TRUCKS AND COMMERCIAL CARS

Low additional cost. See your Ford dealer for full details and prices.

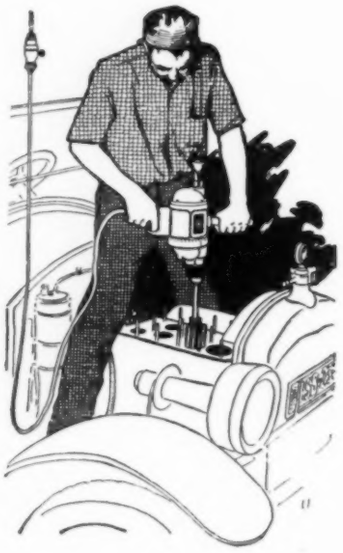
Any new 112-inch wheelbase Ford V-8 Commercial Car can be purchased for $25 a month, with usual down-payment. Any new 131½-inch or 157-inch wheelbase Ford V-8 Truck can be purchased with the usual down-payment on the new Universal Credit Company ½% per month Finance Plans.

FORD V-8 TRUCKS

costs. We asked two questions. One was the average cost per hole (boring only) where the work was done in the fleet operators' own shops. The other asked for the average reboring cost per hole if the work was farmed out. We have taken the averages and averaged them up. Perhaps an average of averages does not mean *everything*, but at least it should give some indication of comparative costs.

Where the work was done in fleets' own shops, the average reboring cost, without any parts, amounted to about 90 cents per hole. Where this work was farmed out to various types of concerns, the average cost for reboring only amounted to about $1.70 per hole —almost twice as much. We do not hold that this is by any means a true average. It seems representative enough, however, and if the figures given are fairly correct, (as we have reason to believe they are) it certainly looks as though a fleet operator who has occasion to farm-out any appreciable amount of cylinder reconditioning work, could save money by buying a machine and doing it himself.

But may we caution you, before jumping at conclusions, why not sit down and figure things out? Go back a year and see how many jobs were sent out for cylinder reconditioning. Add to this number, all of them which you trued-up (satisfactorily or otherwise) with a hone. Then, by simple addition, multiplication or long division, you ought to be able to find out just how much money you would save (or lose) by buying your own equipment. It's a cinch to find out how much such equipment is worth. Just make your wants known and there'll be plenty of salesmen camping on your doorstep. We do not hold that it is cheaper to do your own work, or vice-versa. But circumstances alter cases, you know, and perhaps it will pay you to do some careful figuring before deciding that you are now wrong (or right).



WHAT'S missing in this picture? A good vacuum-attachment for removing grit. . . . Although but five (out of 144) operators use the hone exclusively for cylinder reconditioning, 71 fleet men find it a valuable tool for finishing up, after reboring, our survey revealed.

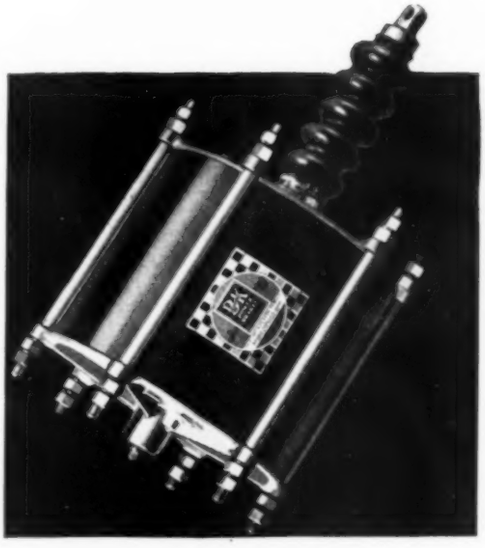
The fact that reconditioning should be done only by specialists was substantiated in the answers to the next question, in which we asked *"If you do your own reconditioning, does one man in your shop specialize, or do you allow any of your men to do this work?"* . . . The answers were: "One man specializes" —41; "Any men can do it"—6. The balance of our 144 fleet operators farm out this work; therefore they could not answer the question.

Next we asked: *"What methods are used to keep grindings, grit, cuttings, etc., out of motor, bearings and other parts?"* Thirty-six fleets replied, "Use vacuum attachment." Another 18 operators use rubber cups which fit into the bottom of the cylinder bore to catch the dirt. Seventeen fleets remove all cylinder blocks for reconditioning and clean them thoroughly, both before and after. Eighteen more operators wrap up the bearings and other parts with plenty of rags and then wash everything thoroughly after reconditioning. Several other methods were mentioned, including tin cups

(*Please turn to page* 67)

A large number of fleet operators farm-out their cylinder reconditioning work. Automotive jobbers and cylinder grinders are getting the bulk of this work, our survey revealed. . . . This picture is typical of the class of firm which is doing this work for fleets. . . . It happens to be the complete service shop operated by a Chicago parts wholesaler, and from the picture, it looks quite busy, handling, in addition to cylinder reconditioning, piston grinding, pin fitting, rod-aligning, rebabbitting, flywheel ring-gear installation, etc.

ALL POWER BRAKING *ought to be* BENDIX POWER BRAKING



but only 96% of it is!

EVERY advantage that power braking can offer is yours when you equip with Bendix B-K Controlled Vacuum Power Braking . . . and the more important of these advantages are not obtainable in any other form of auxiliary or supplementary stopping equipment.

"Reactionary Cushioning", which maintains "pedal-feel", eliminating sudden lock-wheel stops, is one exclusive Bendix advantage. Nation-wide service and more than ten years of successful use, are others. A nation-wide Bendix B-K Exchange service plan, saving tie-up of the vehicle, is another point to remember.

Since the superiority of Bendix B-K from every point of view is so evident, doesn't it seem reasonable that all power braking ought to be Bendix Power Braking? Let us furnish you all the facts.

- ★ Fully Controlled Power Application
- ★ Least Weight Added
- ★ Fewest Added Parts
- ★ Low First Cost
- ★ Practically No Maintenance
- ★ Instant Remote Control
- ★ All Emergency Features of Train Operation
- ★ Quickly Installed
- ★ Original Brake System Left Intact
- ★ Nation-Wide Exchange Plan
- ★ Nation-Wide Service Organization
- ★ Years of Power Braking Experience and Unapproached Protection Over Future Years of Service

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BENDIX PRODUCTS CORPORATION

(Subsidiary of Bendix Aviation Corporation)

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GOVERNORS--To Use or Not to Use?

A BRIEF discussion on the subject of Speed Governors, prepared as a "news letter" for the National Safety Council. . . . The conclusion drawn is that "any unit equipped with an engine which is liable to be over-speeded and, therefore, damaged, should be equipped with a governor."—Editor.

By J. W. Lord,
Safety Engineer,
Atlantic Refining Company,
Philadelphia, Pa.

THERE are many opinions as to whether or not governors are of advantage on commercial vehicles and on digging into the matter, one finds a variety of answers that reflects the various types of commercial equipment and the kind of work these types are doing.

In the bus field, apparently, the older buses were operated without governors to facilitate speed in gears and to help get around slower units on hills, all of which was looked on as necessary to maintain schedules.

On later buses one will find the engines governed so that bus speeds are approximately 50 miles an hour in this Eastern area of the country.

Beyond question, large bus operators have found that the governed engine not only lasts longer, but governors result in many operating economies such as better gasoline and oil consumption, better tire mileage and more operating miles between overhaul of chassis and engine.

Here and there, one will find the individual bus operator or bus driver who has some particular route where he feels the governor is a decided disadvantage, but in general, governors are being used on buses today where they were not used four or five years ago.

Now, talk to the operator of a fleet of heavy commercial vehicles, hauling heavy loads, and you get quite a different answer. This man has equipment with large heavy engines which develop maximum horse-power around 2,000 to 2,400 revolutions. Little power is gained above these speeds but, if operated above these speeds, the engines may go to pieces much more rapidly than if operated in accordance with the manufacturer's specifications.

Here the use of governors takes on a very decided part in controlling operating expense and maintenance of equipment. Again, the heavy loads that these units carry presents a quite different set of conditions than those found in the high speed bus. There is much more work for tires, springs and chassis to do. The forces that work on these units increase tremendously with speed. We find these heavy units governed to 30 to 35 miles an hour, possibly, 40 miles, in order to secure normal life from all units of this equipment and to effect a general economy of operation and maintenance. The speeds to which these units are governed, from an operating viewpoint, are usually looked upon as safe from a safety viewpoint.

When we start to talk to operators of lighter trucks, operators of taxicab fleets, etc., we get into a much more controversial field. Some of these men have had unfortunate experiences with some types of governors some six, eight or ten years previously, and are inclined to forget that governors have been improved and developed along with the improvements effected in the automobiles.

Some have units operating continually in congested areas with heavy traffic and these conditions in themselves tend to govern the speed of the vehicle; others are operating vehicles over large areas and have considerable territory to cover. The varying conditions to which these units are applied and the individual past experience of the operators all affect their attitude with regard to the use of governors.

The light commercial unit built several years ago to haul 1,000 to 1,500 pounds was capable of speed possibly up to 50 miles an hour. Today these same units are capable of speed nearer 80 miles an hour, and one will find, particularly among fleet operators, who are well organized, that where they operated older style units without governors, today, governors are being used to hold the speed of the newer units down under 50 miles an hour, primarily from a viewpoint of securing lower operating figures, and secondarily to control the speed of the vehicles from a safety viewpoint.

From a viewpoint of safety, I am inclined to feel that these light units can well be governed to speeds of 45 miles, possibly 50 miles per hour. Quite often they

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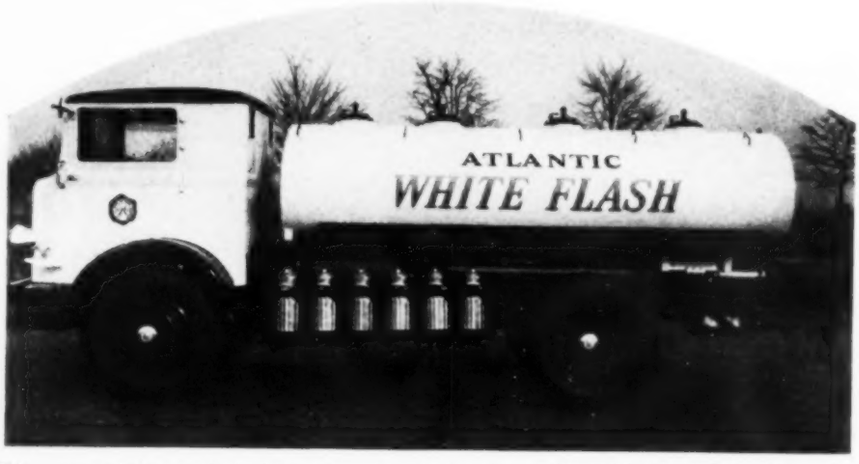
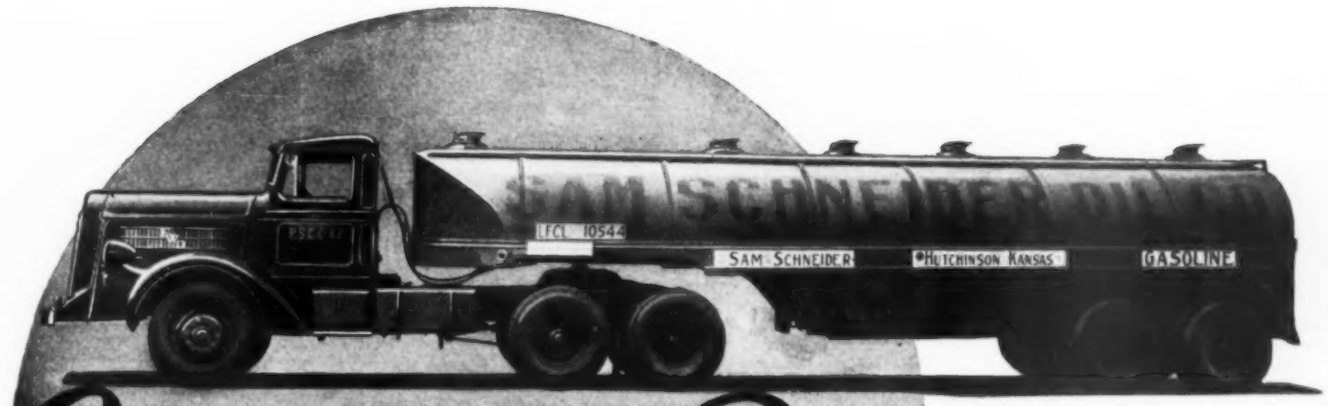


This Autocar job is typical of the heavy-duty trucks operated by Atlantic Refining Company and governed to a reasonable speed in order to secure maximum life and effect a general economy of operation and maintenance. . . . The capacity of this particular unit is between 6,000 and 7,000 gallons.



Controlled Power

enables the FWD to 'take' the roads as they come!

OVER-SPEEDING of the FWD Truck is not necessary in order to make better trip time . . . Equal distribution of load and power to the four driving wheels gives the FWD the ability to go into curves, climb hills, travel over slippery roads at high speed with safety because of its balanced traction . . . It takes the roads as they come.

It is no wonder that the FWD, today, sets the standard for safety, efficiency, economy and dependability . . . Faith in the principle of the four-wheel-drive and constant engineering research have produced the truck that delivers the greatest value for the transportation dollar.

The FWD will give you consistently fine performance and economy of operation with the minimum of maintenance.

Send for a copy of the new FWD Safety book.

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***Canadian Factory*, KITCHENER, ONTARIO**

TRUCKS
1½ TO 15 TONS

5 STEPS TO UNMATCHED TRUCK PERFORMANCE . . .

1. GREATER SAFETY. Front axles are set back, resulting in **power**, as well as load being distributed to all four wheels. This gives the FWD sure footing on slippery pavements, in congested traffic, and when going around curves.

2. GREATER DEPENDABILITY OF SERVICE. Reserve power, rugged construction throughout, and true application of the four-wheel-drive principle, insure continuous operation under any condition. Backed by a nation-wide organization of parts depots and service men available at a moment's notice.

3. FASTER SERVICE. FWDs, with their powerful engines, wide range of gear ratios and four-wheel traction cut down trip time by being able to "make" the hills, curves, and poor going, faster than average trucks. No necessity for over-speeding on the straight stretches.

4. WIDER RANGE OF OPERATION. Four-wheel traction enables the FWD to handle its regular hauling job easily and do the tough jobs as a matter of course.

5. OPERATING ECONOMY. Definite savings are made in gasoline, tire wear, maintenance cost, and other "out-of-pocket" expenses. This is the result of equal distribution of power, load, and scientific four-wheel-drive construction throughout.

CONTROLLED POWER ON AND OFF CONCRETE

"SAFETY" is Paramount in U. S. Truck Co.'s Operation

An Interview with

Robt. F. Jones, Gen. Mgr.,

U. S. Truck Company, Inc., Detroit, Mich.

EIGHTY-FIVE drivers are employed by The U. S. Truck Company, Inc., Detroit, Mich., interstate freight carrier serving Detroit and other cities. As in many other well-known fleets, "SAFETY" is of paramount importance in this one.

Strict rules are set up by the company and are obeyed on an "honor basis" by its 85 drivers. Highway safety, of course, is the first regard when a shipment is in transit—and at *all other* times, too! This company has a unique system of both penalties and awards to the men who pilot their large motor freight units over the long-miled routes to various destinations.

Hoisted above the office of the company's main building is a safety flag that flies at the top of the staff when the U. S. Truck fleet is entirely free from mishaps. Should the slightest accident occur, the involved driver is duty-bound to report it to his superintendent and then go to the flag-pole and personally lower the flag, taking care that it does not become soiled while he handles it.

The flag remains at half-mast during the designated penalization period, which must elapse before the driver is given a hearing before his superiors.

If a second mishap occurs while the flag is lowered, the second driver in question must wait an additional like period before he too can be given a company hearing.

Those drivers whose records during the year show no traffic violations or accidents are awarded substantially in cash, shortly after the first of each new year. This system has been in vogue for several years in this fleet, and is proving to be an extremely valuable one, from both a human as well as a dollar-and-cents point of view.

A compilation recently completed by the U. S. Truck Co., Inc., shows that this organization's trucks covered 3,707,563 miles during 1935, a gain of approximately 20 per cent in mileage over the previous year. Tonnage hauled in the comparable period increased in the same ratio. This announcement was made recently by Robert F. Jones, general manager.

Increases in business made during the last few years necessitated the enlargement of the U. S. Truck facilities and the addition of many new units to its hauling equipment. Only quite recently the company purchased the six large three-ton tractors, shown in the above illustration, to take care of additional heavy hauling, although it handles all types of light and heavy shipments of mixed merchandise, which are delivered mainly to retail merchants, wholesalers and factories in the cities on its regular daily routes.

Each tractor of the U. S. Truck organization covers approximately 50,000 miles a year, or slightly less than 1,000 miles a week. Service to customers actually extends over the full 24-hour period per day and the company points with pride to the fact that its doors have not been locked in a number of years.

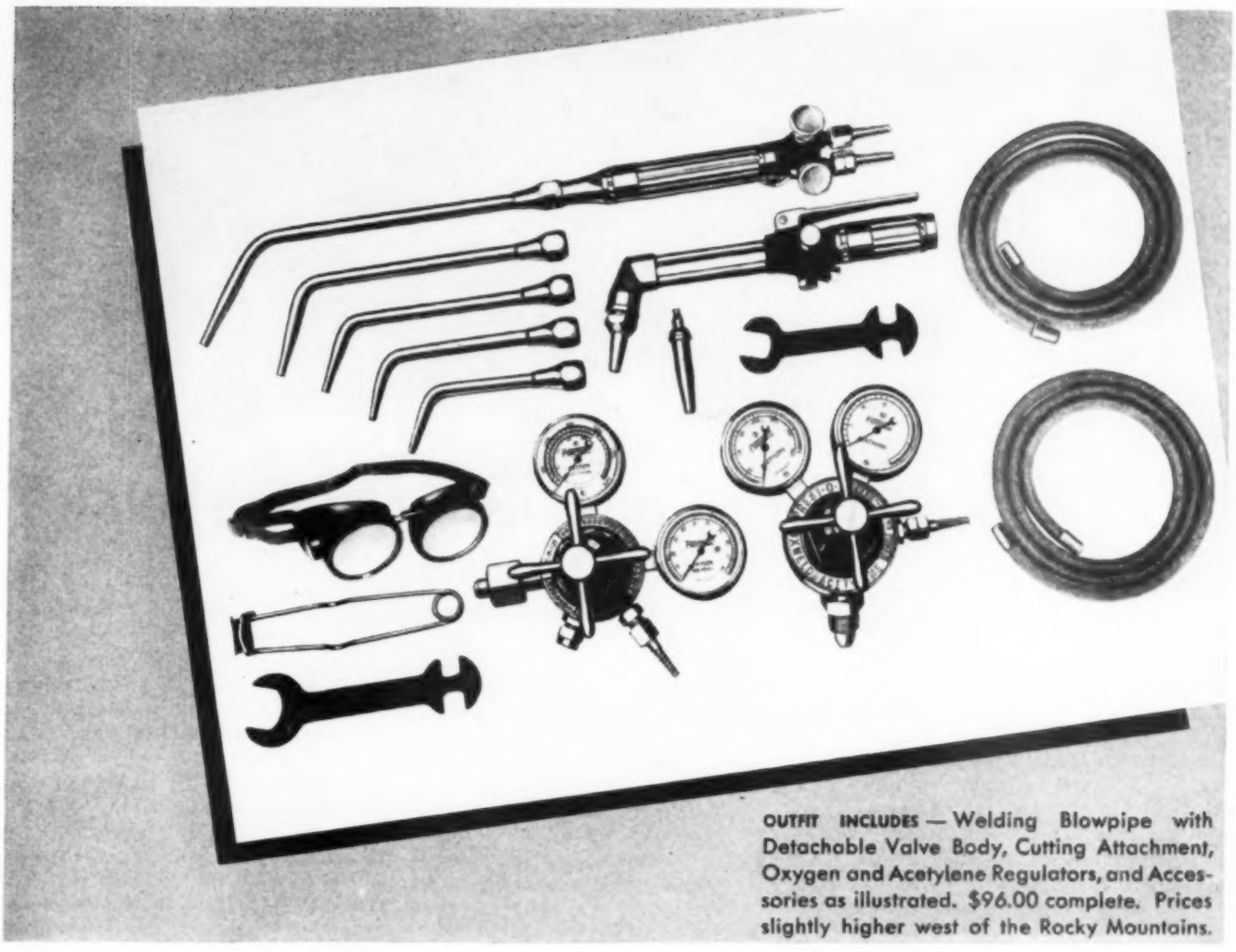
Since last Fall, this company's operations have been extended as far west as Muskegon and Milwaukee. Freight on this route is shipped by truck to Muskegon and then by boat to Milwaukee where it is again handled by truck for delivery to the customer. This, of course, is only in force when the navigation season is open.

Other principal cities served daily by the U. S. Truck Co., Inc., are Ann Arbor, Battle Creek, Flint, Grand Rapids, Jackson, Lansing, Port Huron and Muskegon in Michigan, and Toledo, Ohio. The small towns between these principal cities also receive door-to-door pick-up and delivery service on freight.

Formation of the U. S. Truck Co., Inc., was effected six years ago from a partnership that was established March 12, 1920, between Norman F. Sauer and Carl W. Behrens. Both men had been working several years for a motor company in Detroit before forming the partnership. The equipment at first consisted of one truck which was driven by one of the partners, while the other continued to work in the automobile plant.

When the embryo company had completed its first year, its equipment totaled three trucks. Conditions

(*Please turn to page* 68)



OUTFIT INCLUDES — Welding Blowpipe with Detachable Valve Body, Cutting Attachment, Oxygen and Acetylene Regulators, and Accessories as illustrated. $96.00 complete. Prices slightly higher west of the Rocky Mountains.

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The Prest-O-Weld Combination

WELDING AND CUTTING OUTFIT

The Prest-O-Weld Detachable Valve Body fits both the welding blowpipe and the cutting attachment. This feature enables you to change from welding to cutting in ten seconds—and saves valuable operating time.

Each item in this outfit is durable and simple. It is ideal equipment to handle efficiently every welding and cutting job in nine out of ten shops. Your jobber will gladly show you other reasons why a Prest-O-Weld Combination Outfit will make money for you.

PRODUCT OF A UNIT OF UCC UNION CARBIDE AND CARBON CORPORATION

THE LINDE AIR PRODUCTS COMPANY

Unit of Union Carbide and Carbon Corporation

UCC

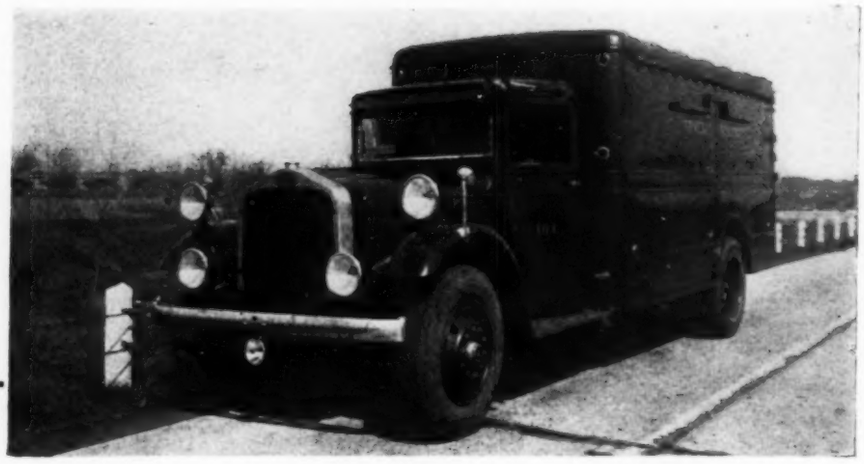
New York and Principal Cities

In Canada: Dominion Oxygen Co., Ltd., Toronto

PREST-O-WELD

WELDING AND CUTTING APPARATUS

By H. Clay Fischer,
Editor, FLEET OWNER



Why Wait *for* Compulsory Legislation?

REFLECTORS, Direction-Signals, Clearance and Marker Lights, Fog-Lights, Road Lights and other Auxiliary Lighting Equipment constitute one of your best investments in Safety. . . . The wise operator installs such equipment on his fleet, without waiting for Legislation to compel him to do it.

•

THE two different trucks illustrated on this page might seem to be "all dolled up like a circus horse" to some operators. To their owners, they simply constitute good sense in Safety lighting, reflecting and signalling equipment. There is quite a variety of latitude in selecting such equipment.

Take the rear-ends of trucks, for instance. These have always been recognized as a dangerous menace on the dark highways at night, especially should the tail-lamp be one of the old-fashioned oil-burning variety (there are plenty of these still operating) or should the tail-lamp be stuck at the end of the frame, far forward of the end of an overhanging body.

Remember how often we used to almost run into the rear end of a truck on the highway at night, especially those slow-moving ones, because its tail-lamp was not visible until we were almost on top of it? This picture has changed considerably in recent years, but there is still room for improvement.

It is only within the past several years that state legislators have taken official recognition of this menace, and have taken steps to abolish it or at least to minimize the concurrent dangers. Mandatory rulings requiring the use of good reflectors to supplement the tail-lamp, and also to act as clearance markers, showing the width of the vehicle, are not new, and laws to this effect are present in almost every state, so far as trucks and buses are concerned. Far-sighted operators have not waited for legislation, however.

New York State recently passed a law requiring that *every* vehicle, including passenger cars, must be equipped with at least one adequate and approved RED reflector, when the vehicle is operated on the highways of the state during the period between sunset and sunrise. This law is a splendid thing, because there are many "jallopies" still running around without reflectors—cars of more modern manufacture have reflectors incorporated into the tail-light lens. On wide bodies, too many reflectors cannot be used.

IS this an example of the "safest" truck? It boasts a complete complement of reflectors, direction-signals, marker lights, stop-and-tail lights, wig-wag caution-lights and also a safety "motto" at the end of the frame. We told you all about this truck in our May issue.—Editor.

Clearance or marker-lights constitute another piece of safety equipment which the smart operator has seen fit to install, without first waiting for compulsory legislation to make him put them on. These are being placed on his trucks as far out to the sides as possible, front and rear, top and bottom, so that *some* of them will be in direct line with oncoming headlights at all times.

The truck illustrated at the head of this article is typical of those in the fleet operated by The General Electric Company, Schenectady, N. Y. Each of these trucks is equipped with two sets of headlights, one set being directly connected to the battery, with special switch in cab for emergency use. Each truck is also equipped with two ditch or fog-lights located below the bumpers. There are also two marker lights on the front of the body (at the top) and two at the rear. There are also three "passing" lights located along the scrub-rail of the body on each side. In addition, there are two stop-and-tail lights at the rear of each truck, as well as suitable and effective reflectors. And, since the photo was taken, each of these trucks has been equipped with suitable direction-signal devices, front and rear. Oil-pots and red flares are also part of the emergency lighting equipment on this fleet.

The other truck illustrated, belonging to the Standard Oil Com-

(*Please turn to page* 69)

BALANCED

There's a GMC trailer complete with body to match

Buyers of GMC trailers are assured of matched design and construction. Not only are the trailers themselves available in sizes to fit the needs of 9 out of 10 operators, but they are also obtainable complete with standard bodies to fit. There are both smooth-side and corrugated-side bodies—open or closed, square or round-nose. Each is matched to the trailer chassis for which it is designed. Each is built to the same high standards as the chassis itself.

And for those operators who find need for bodies of special design, body builders located at strategic points throughout the country are ready to co-operate with GMC engineers to the end of securing "balanced" design in keeping with GMC high standards.

Look to GMC for trailer values that challenge the field. Call your nearest GMC dealer for the facts.

GMC

THE TRAILER OF VALUE

GENERAL MOTORS TRUCK COMPANY, PONTIAC, MICHIGAN

The TROUBLE SHOOTER

A department, devoted to correspondence from readers of FLEET OWNER. Any questions having to do with automotive service will be answered in this department. All properly signed inquiries will be replied to by mail and such of them as are believed to be of possible interest to other readers will be published in these columns.

Some Questions on Bearing Replacements

Question: I am wondering as to what kind of information there is available regarding the fitting of replacement inserts in late type motors. I have talked this bearing proposition over with different service men and they have offered one or two suggestions: First, the filing of the cap; second, placing paper or shimstock between the insert and the cap.

I have a catalog from the Federal-Mogul Corporation, but there is nothing in it as to what procedure to take in making these replacements. I find that shafts will be worn .002" or .003" undersize after they have been used a while, and if replacement bearings are installed, they will be too loose, causing loss of oil pressure. I would appreciate any information you can give me on this subject.—R. E. K., Des Moines, Iowa.

Answer: The filing of bearing caps is definitely *taboo* in modern pressure-lubricated engines. . . . This leaves an out-of-round condition, even with a round journal, and allows oil to escape into the out-of-round space, only to be thrown on to the cylinder walls and result in an oil-pumping motor. The effect of this practice is sometimes blamed on the piston rings, erroneously, of course.

The use of shims between the insert and the bearing cap will not correct the condition, either. This will raise the bearing at the joint and will necessitate filing it off, and again you will not have a true circle, with the ever-present chance of oil-slinging creeping in.

Many mechanics are "getting away with it" by filing caps and using shims, but this is *not* correct, theoretically, and often leads to headaches which are not recognized, but blamed on something else.

On pressure-lubricated engines the clearance can be as great as .0025". Too little clearance will result in the oil not reaching the bearings; too great a clearance will result in excessive oil consumption. When the clearance reaches .005", we would say that some sort of a bearing job is in order.

You state that your shafts are often worn .002" or .003". If this wear is even, and there is no out-of-roundness, you might be able to get by with standard or undersized bearings; but if the shaft is out-of-round on the journals, it should be reground and undersized bearings fitted. A good fit, when new, should have from .0015" to .0025" clearance on main or rod bearings, when pressure-lubrication is used.

Our advice is first to measure the shaft for wear and out-of-roundness. If it is more than .001" or .002" out-of-round, have it reground. Then install an undersize bearing that will leave the correct clearance. Many operators are obtaining bearings in the greatest undersize possible, and boring them out with line-boring equipment, to get the necessary clearance.

Under separate cover we are sending you a copy of a book entitled "*Automobile Engine Bearings and How to Service Them.*" You will find this a valuable guide in answering many of your bearing questions. Should other readers desire a free copy of this book, just drop a line to the Editor, asking for a copy of it. The supply is limited, so first come, first served.

●

You May Not Believe It!

(But It's True)

THE FACT:

STREAMLINING of fast-moving vehicles has been known to increase their over-all speed by as much as 17 per cent, without making any other changes.

THE PROOF:

WHEN a streamlined cowling was added to a regulation airplane engine, approximately 17 per cent was added to the speed of the plane, according to the National Advisory Committee for Aeronautics. . . . The increase in speed brought about an estimated potential saving of more than five million dollars a year. . . . Today, cowling is almost universal.

Welding Tip: Welding and Cutting Hose

UNNECESSARILY long lengths of hose for welding and cutting apparatus should be avoided. When long lengths must be used, care should be taken that the hose does not become kinked or tangled and that it is protected from damage.

Always protect hose from being trampled on or run over. Do not leave it so that it can be tripped over because a connection may be pulled off or the cylinders and equipment may be pulled over. The hose should also be protected from flying sparks, hot slag and hot objects and also from contact with oil or grease as these deteriorate the rubber and constitute a possible hazard with oxygen.

All hose should be inspected and kept in repair in accordance with the manufacturer's recommendations.

"WHAT! ANOTHER BEARING FAILURE

Why didn't YOU *replace with* SKF!"

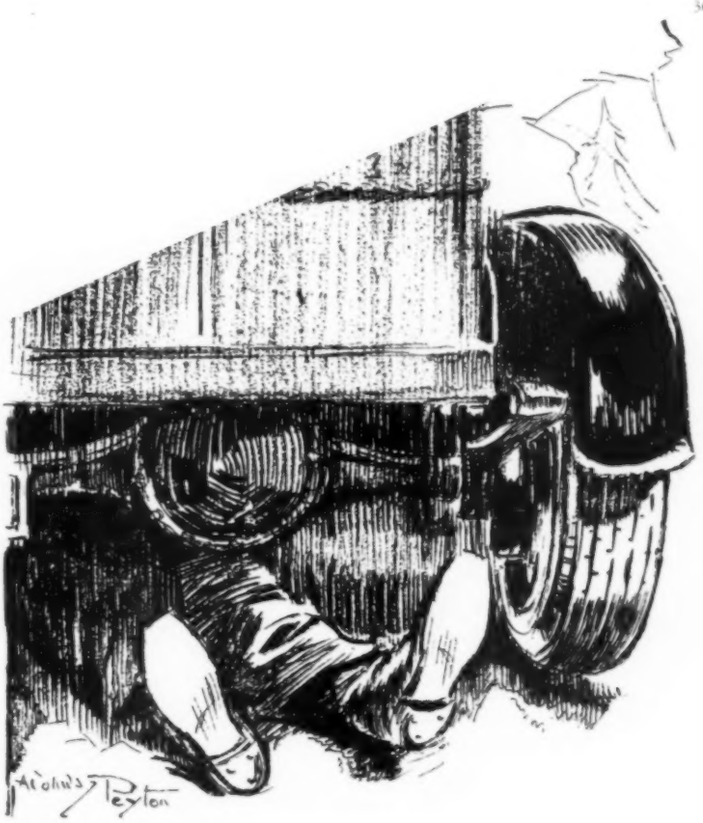
No time to think about bearings when a valuable cargo is tied up along the highway. No time to *wish* the bearings were SKF.

Take a tip from fleet owners who experimented with second-hand "bargain" bearings . . . and found them far too costly. NOW they *always* specify SKF.

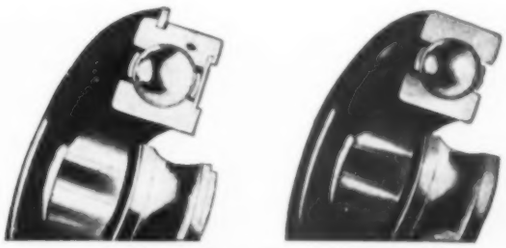
No matter where you operate, SKF can give you the name of a reliable source of supply for replacement bearings.

SKF INDUSTRIES, INC., FRONT ST. & ERIE AVE., PHILA., PA.

3651



Every *good* mechanic knows that *good* bearings mean *good* performance!



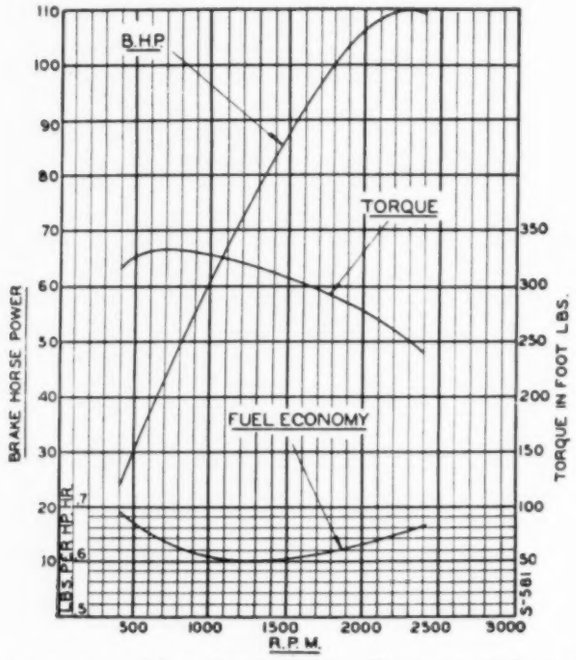
SKF

BALL & ROLLER BEARINGS

Horsepower, Torque, Compression-Ratio, Etc.

Question: Have you any information telling how to figure out horse-power, torque, compression-ratio, displacement, etc. . . . I would appreciate getting any data that you may have on the subject.—W. E. P., Washington, D. C.

Answer: These subjects all have been discussed from time to time in this publication, and it was our impression that most fleet maintenance men are familiar with them. However, we are presenting the following information for whatever it may be worth. It might at least refresh some memories that may have become a bit hazy.



What a torque and h.p. chart looks like. This is a typical one, belonging to a Waukesha Ricardo-Head Six cylinder engine.

Horse-power and torque are *not* figured out. They are arrived at as a result of dynamometer tests, made by the engine maker in his own laboratory. The chart which we are printing with this article is a typical one, made by an engine manufacturer, *after* the engine was built, and *not* figured out on paper. There is no use of trying to figure these out on paper by the use of a "formula" because too many things have to be considered and design changes are often made that alter "standard" formulae.

Compression-ratio is built into the motor. For example, a motor with a 6-to-1 ratio has a certain space in the combustion chamber when the piston is at the top of the stroke. When the piston is all the way down, at bottom dead-center, the total space above the piston will be six times that. The same ratio may be found in engines of varying bore and stroke. The space is generally measured in cubic inches.

Piston displacement is figured by taking the diameter of one piston (or cylinder), squaring it and multiplying it by .7854, which will give the area of the bore in sq. in. This figure is then multiplied by the stroke, and then by the number of cylinders, which will give the total displacement of the entire engine in cubic inches.

Torque was discussed fully on page 34 of our April, 1933 issue. We are sending you a clipping by separate mail. Other readers who may want to brush up on the subject may refer to their file copies.

●

Stainless Anti-Friction Bearings Ready

DESIGNERS familiar with the advantages of stainless steel ball and roller bearings will be glad to hear that these bearings are now available in practically all sizes and types.

Stainless steel bearings have been used for a number of years for a wide variety of purpopses, especially where moisture is present. The textile industry, for instance, uses these rust-proof bearings for equipment which actually runs under water. The motion picture industry finds them indispensable in film developing machines where the bearings must resist chemical attack.

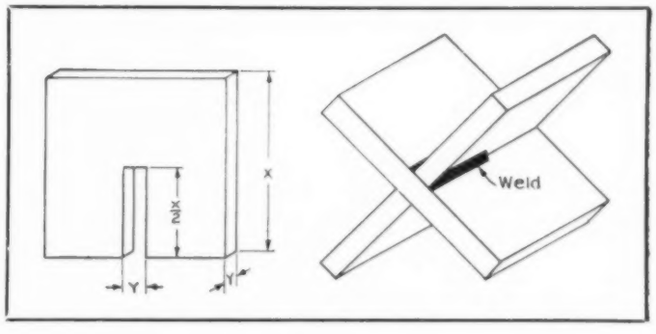
●

Making V-Blocks for Welding Work

A SIMPLE method of fabricating vee blocks was recently reported which may suggest a way for other shops to save money in obtaining a supply of these useful work-holding devices. Many shops find this type of fixture an indispensable aid in positioning work for welding.

Steel plate is used as the material. The thickness is not important, although the blocks should be of sufficient weight to make them heavy enough for practical purposes. Probably ½-in. material would be most suitable as a minimum size, because stability can be gained by the weight of the blocks. Steel 1 or 1½-in. thick would provide enough weight for larger and heavier work. Several such vee blocks of varying size and weight will always be found of value, and it is advisable for even greater convenience to have at least two of each size. This is particularly true in lining up such parts as small crankshafts or tubular members.

By means of a carefully guided cut, shape two squares of steel of the relative proportions shown in the accompanying sketch. Then in from the center of one edge



of each piece cut out a slot of the same width as the thickness of the steel plate and in depth equal to one-half the length of a side of the other steel square. The two pieces of steel will then fit together in a simple joint. The block is then completed by making a fillet type weld as shown in the sketch. It will probably be found that the use of the bronze-welding process will result in little possible effect from the heat of the flame.

TRUCK NEWS FLASH!

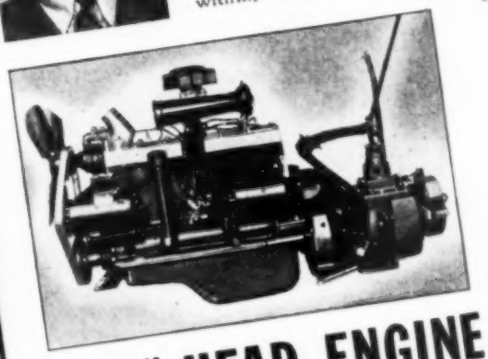
DODGE 1½ TON NOW $505*

"I'M SAVING $6 TO $8 A MONTH ON GAS ALONE"

Says H. R. Preskill
Vice-President, Preskill Lumber Co. Chicago, Illinois

"Any truck buyer who will take a few minutes to check up will find that only Dodge of the three lowest-priced trucks gives a combination of safety-steel cab, genuine hydraulic brakes, and six special gas and oil-saving advancements. I'm saving $6 to $8 a month in gas alone with my new Dodge."

1½-Ton 136" W. B. Chassis and Cab (Trailer, 5th wheel, and special equipment extra)...$605*



"L"-HEAD ENGINE 6-CYLINDERS

Saves Both Gas And Oil!

Only Dodge of the three lowest-priced trucks gives you this money-saving type of engine. It has six special gas and oil-saving features—yet it's simpler, costs less for service! From coast to coast owners report that "It saves up to $95 a year on gas alone." Ask your Dodge dealer to let you borrow the little machine that shows how far any truck, new or old, goes on a gallon. Give yourself a gas economy "show-down" of Dodge against any other old or new truck. See how much money Dodge will save you on gas! See your Dodge dealer today!

DODGE
Division of Chrysler Corporation

DODGE PRICED WITH THE LOWEST.... YET BUILT TO OUTLAST THEM ALL!

No wonder truck buyers from coast to coast are swinging to Dodge in ever increasing numbers! The fact that Dodge—with all its extra quality features—is priced down with the lowest, still is the biggest news of the year in the truck business.

Ask your Dodge dealer for a copy of the "Show-Down" Score Card. It compares all three lowest-priced trucks feature-by-feature for you in plain black and white. Check up for yourself how far ahead Dodge is in money-saving features.

Check These Values

1½-Ton Chassis—136" W. B.—6-cyl.	$505*
1½-Ton Chassis & Cab—136" W. B.—6-cyl.	$605*
1½-Ton Stake—136" W. B.—6-cyl.	$690*
½-Ton Chassis—116" W. B.—6-cyl.	$370*
½-Ton Pickup—116" W. B.—6-cyl.	$500*

*List prices at factory, Detroit, subject to change without notice. Special equipment, including dual wheels on 1½-ton models, extra. Easy terms gladly arranged to fit your budget, at low cost, through Commercial Credit Company.

MAKE THE FREE GAS TEST...GET THE FREE "SHOW-DOWN" SCORE CARD... SEE YOUR DODGE DEALER TODAY

$370* ½ TON CHASSIS 116 W.B.

Dependable **DODGE TRUCKS**

• NEWS of the TRUCK INDUSTRY •

Good Truck Year is Predicted

THE motor truck industry is rolling along on its way to the best year in its history, according to all signs. . . . Retail sales (domestic) for the first six months of this year will have run around 300,000 units. Compare this with 1929, when but 263,192 units were produced. . . . From all indications a total of 600,000 truck units will have been sold, when the new year (1937) is rung in, it is anticipated.

•

Chevrolet 6-Months Sales Set Record

CHEVROLET's first six months' business in trucks set a record of sales that exceeded any previous first half in the history of the company, W. E. Fish, truck sales manager recently announced. . . . A total of 119,294 new units were delivered during this period, as compared with the previous record of 102,321, which has stood since 1929. . . . The increase over the corresponding period of last year is 26,091 units.

•

Packard Building New Factory

PACKARD Electric Corporation, Warren, Ohio, makers of all types of automotive cable, have started construction of a modern one-story factory building which will cost over $200,000. . . . The new building will provide an increase of approximately 50 per cent in manufacturing floor space. . . . B. N. MacGregor, general manager, stated that the expansion program was necessary because of a 100% increase in business shown last year over 1933. . . . A substantial additional increase is in sight for this year.

•

Miller to Produce "Bantam" Cars

THE newly-organized American Bantam Car Company, Butler, Pa., includes Harry A. Miller and Thomas L. Hibbard, who have joined forces to produce small commercial and passenger-cars to sell in the $300 price class. The new car will be known as the American Bantam. . . . Miller and Hibbard are vice-presidents. R. S. Evans, of Atlanta, Ga., is president of the newly-formed company. . . . A quarter-ton delivery truck is planned, along with the passenger-car models.

Autocar Sales Up in First Half

AUTOCAR reports increased sales for the first half of 1936; of Autocar trucks, 60 per cent ahead of 1935; of Studebaker trucks (for which Autocar is sales agent) 75 per cent ahead of 1935. . . . R. P. Page, Jr., Autocar president, forsees the second half of 1936 running ahead of even the first half.

•

Dodge Commercial Insulated Body

DODGE offers a new light-weight insulated interior which may be installed in the body of their standard commercial panel, for the purpose of maintaining the temperature at the same level for a number of hours.

. . . It is especially adaptable to the hauling of meats, fresh vegetables, ice-cream and other items which deteriorate from a change in temperature. . . . The details? Address Joe Burke, Dodge Truck Division, Detroit, Mich. . . . Mention of FLEET OWNER always helps.

•

DeLuxe Equipment for Ford Trucks

FORD Motor Company announces the availability of deluxe equipment on all its trucks and commercial cars. . . . All units on 112, 131½ and 157-inch wheel-bases are now obtainable at extra cost with ventilating back window, dome-lamp, tandem windshield wipers, sun visor for driver, ash tray, cigar-lighter, twin horns and heavy chrome finish on windshield frame, rear-view mirror, radiator shell and grill. . . . Other types are furnished with most of these items.

Lamborn Now Dodge Vice-President

DODGE announces the promotion of Fred J. Lamborn to the office of vice-president in charge of manufacturing. . . . Mr. Lamborn has been with Dodge since 1911, servicing in various production capacities.

•

Trailer Company Expands

FIVE-and-one-half acres of land adjoining the Trailer Company of America plant at Cincinnati, Ohio, have recently been secured for the much-needed expansion of the production facilities of the company. . . . Ground has been broken for the principal building to be erected on the new site. It will have an area of 16,000 sq. ft. . . . A smaller building will house the paint shop and in addition, nearly 5,000 sq. ft. will be devoted to offices, laboratory and sales rooms.

•

Diamond-T June Sales Highest

DIAMOND-T reports sales of their trucks soared to a new all-time record in June . . . A total of 1,533 orders were received during the 30 days, which represented a 66 per cent increase over June sales last year. . . . This marked the fourth successive month in which all records of any previous year were shattered by the Company.

•

Ford June Deliveries Largest Since '30

RETAIL deliveries of Ford V-8 passenger cars and commercial vehicles in the United States during June were the largest for any June since 1930, it was announced at the home offices of the Ford Motor Company. The total for the month was 108,379, and contrary to the usual seasonal decline at this time of year, was an increase over the May total.

•

Elliott a Studebaker Vice-President

STUDEBAKER announces the election of Kenneth B. Elliott as vice-president. . . . For several years Mr. Elliott has been a member of the executive staff of The Studebaker Corporation. His duties will include those of assistant to the president, a position which he has held since 1930.

•

Service Recorder Promotes Weiner

NAT WEINER has been promoted to Eastern Manager of The Service Recorder Company, with headquarters in the Fisk Bldg., New York City. . . . In addition to the New York Metropolitan territory he will have charge of the entire New England states. . . . Nat has an enviable record of 16 years' successful service with this company in Detroit and Chicago. . . . In his new field, he will devote his efforts to aiding fleet operators to secure greater efficiency in motor truck operations. . . . He will be glad to make a survey of any operation at any time, without obligation, he tells us. . . . Why not take him up on it? (Ed.)

FAVORITE AT THOUSANDS OF TABLES

. . . and Hormel trucks have the finish that's

SPECIFIED FOR THOUSANDS OF TRUCKS

THE 700 handsome trucks that deliver the famous Hormel foods all over the country are finished 100% with Du Pont Automotive DULUX.

Like fleet owners everywhere, the George A. Hormel Co. not only cuts maintenance costs with Automotive DULUX, but uses this brilliant, durable finish to make each truck a smart-looking, business-building advertisement, wherever it goes.

Automotive DULUX will save *you* money too. Here's how:

1. DULUX IS DURABLE. It keeps its lustre far longer because its tough, elastic film resists the wear and tear of the road . . . does not chip or crack readily . . . is resistant to all kinds of weather conditions . . . is not easily stained by grease, oil or traffic gases.

2. DULUX IS EASILY CLEANED. Because its protective film actually sheds dirt, DULUX cleans easily and polishes quickly to a high lustre.

3. DULUX CUTS COSTS. When your trucks are finished with DULUX, you'll find trips to the refinishing shop few and far between. And its quick-drying qualities get your truck out of the shop faster.

You can apply Automotive DULUX yourself, with brush or spray. Or if you don't maintain a refinishing shop yourself, an Authorized DUCO-DULUX Refinisher will do the job for you.

Ask any Du Pont representative for complete details about Automotive DULUX. Or write to E. I. du Pont de Nemours & Co., Inc., Finishes Division, Refinish Sales, Wilmington, Delaware.

DU PONT

AUTOMOTIVE **DULUX**

REG. U.S. PAT. OFF.

LETTERS

TO THE EDITOR

FROM A FAR-AWAY BUS MAN

● *Dear Mr. Fischer:* We recently received our first copy of your magazine, FLEET OWNER, which corresponds to the May, 1936 issue, and were very much interested in the article on *"Preventive Maintenance."*

We should like to obtain a little more information on this subject, and note that this is the third of a series of previous articles. Would it be possible for you to send us the two preceding issues containing these articles? We would also appreciate more complete data, if possible.

We are engaged in the passenger transportation business and operate a fleet of 125 passenger buses. It is generally conceded by all transportation men who have come in contact with our organization that this fleet is the best kept and the best maintained in the Islands.

Some of our trucks have been in continuous service for ten years and still function as quietly and efficiently as when new. However, we feel that there is possibly still room for some improvement, and if you can supply us with any data or information which will assist us in bringing this about, we would appreciate it very much.—*M. Olson, Manager, Laguna Tayabas Bus Co., San Pablo, Laguna, Philippine Islands.*

●

NEW YORK STATE TAXES

● *To the Editor:* The 1934-35 Legislature of New York State amended the law regarding incorporated trucking companies, bringing them into a class with rail, river, telephone and other transmission and transportation companies.

This change caused them to pay one-half of one per cent of their *gross* receipts as an additional tax. The industry was strangely apathetic. No appearances were made against the bill. Now the law has been in effect for over a year and the tax has been paid by thousands of companies.

Since this tax discriminates in favor of unincorporated New York State truckmen and foreign trucking companies, I believe your readers should pay more attention to the tax liability of the truck owner and would be interested in a short article on the subject. Even the out-of-staters should be interested in this, because many of the states have the happy faculty of following the line of New York State on tax matters.

I believe this phase of the law demands something in the way of attention and correction.—*Frank T. Taafe, Tax Consultant, P. O. Box 39, Albany, N. Y.*

●

SAFETY PICTURE CLICKS

● *Dear Mr. Fischer:* I thought I would let you know how successful our first safety meeting was, in conjunction with Plymouth's safety picture entitled *"Everybody's Business,"* which you so kindly arranged to have shown for us.

We had an attendance of 150 chauffeurs and employees and also two officers of the Maryland State Police, who gave short talks on safety. The meeting was extremely successful and interesting.

We are now making these safety meetings monthly affairs, and want to thank you very kindly for the part which you played in making our first meeting possible.—*Wm. G. Bauer, Delivery Supt., C. D. Kenny Co., Baltimore, Md.*

●

UNIFORM SUGGESTION:

● *Dear Mr. Fischer:* I enjoyed your article on Uniforms in the May issue of FLEET OWNER. You seem to have a good grasp of the uniform situation in regard to delivery fleets.

May I add that uniforms of wool, gabardine or serge have proven more satisfactory than cotton. . . . I would like to have an extra copy of the May issue, which I happened to see in the files of a fleet operator.—*L. D. Rosenfield, Rosenfield Uniform Company, Boston, Mass.*

DEVELOPS "STOP-MASTER"

● *To the Editor:* You are doubtless familiar with the practice of some truck drivers in leaving their engines running from the time they leave the garage in the morning until they return at night. Of course you are cognizant of the fact that this wastes an enormous amount of gasoline.

The writer is interested in a device, which we call the "Stop-Master." It saves a great deal of gasoline by allowing the truck motor to idle only a definite number of minutes (from one to six) at which time the ignition is automatically cut off and the motor stops.

These devices are inexpensive and we have had some in operation in our own fleets for about five months with uniformly good results. Gasoline savings average about 15 per cent and run as high, in isolated cases, as 50%. There is also said to be a material saving in engine wear, since on ordinary trucks the oil pressure seems to be negligible at idling speeds.—*L. H. Heller, Northland Milk Company, Minneapolis, Minn.*

●

"MOST INTERESTING BOOK"

● *To the Editor:* I was recently given a copy of your magazine, FLEET OWNER, by a friend. I find FLEET OWNER the most interesting publication of its kind that I have ever seen. It tells all about what is going on in the truck industry.

If it is possible, I would like to be put on your mailing list to receive it every month.—*Howard Miller, Mgr., Miller Transfer Company, McKeesport, Pa.*

●

"A WORTHWHILE JOB"

● *Dear Mr. Fischer:* We are sending our reply to your latest blank in the Question-of-the-Month Club.

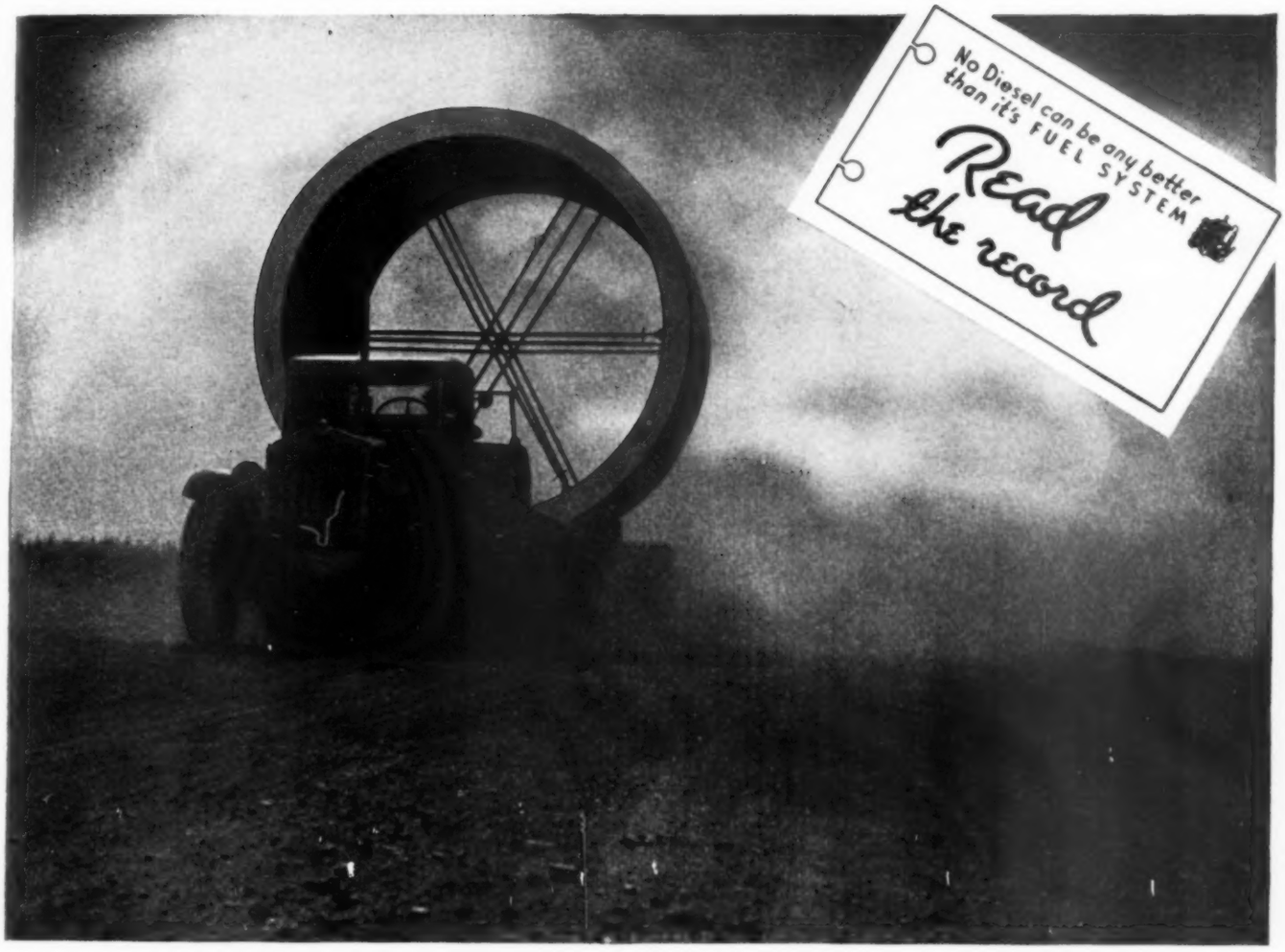
We have found the questions and answers which you publish from time to time, concerning various fleet maintenance practices, to be of considerable interest and we feel that you are doing a very worthwhile job in this connection.—*A. A. Heinz, General Cigar Co., Inc., Chicago, Ill.*

●

SEEKS DIESEL INFO'

● *To the Editor:* I would like to get a copy of the booklet entitled *"What is a Diesel"* as offered in FLEET OWNER some time ago.

I may also state that I get a great deal of good from your magazine, FLEET OWNER, which we receive every month, and wish to thank you for sending same.—*Jerry Faulkner, Service Foreman, Aurora Ice Cream Company, Aurora, Ill.*



43 ton loads

Over the sand dunes and sun-baked foot-hills of California and Nevada delivering the world's largest concrete pipe sections, a fleet of Cummins-Diesel powered trucks are building daily performance records.

Operating in temperatures of 120 degrees and more, these trucks work continuously 24 hours a day.

The flexible performance and smooth running dependability of the Cummins is the result of its exclusive fuel distribution and injection system. Ask your nearest Cummins dealer for the new booklet FS-100.

CUMMINS ENGINE COMPANY, 107 WILSON STREET, COLUMBUS, INDIANA

CUMMINS-DIESELS

AUTOMOTIVE • INDUSTRIAL • MARINE

JOHN LAW SEZ:

Recent Legislation in Eastern States with Reference to Reflectors and Direction-Signaling Equipment:

MASSACHUSETTS

Direction Signals Required

EFFECTIVE July 1st of this year, this state passed a bill requiring approval directional signals on motor vehicles. Here is a resumé of the new law:

"All motor vehicles so constructed that the distance from the centerline of the steering column to the extreme left edge of any part of the body or load exceeds 22 inches, must be equipped with an approved directional signal system when operated on state highways in Massachusetts, after July 1st, 1936.

"Two units shall be mounted on the front of the vehicle so as to be visible in the direction towards which the vehicle is proceeding; and two units on the rear of the vehicle, visible from the reverse direction.

"Front units are most effective when mounted on mud-guards, but they may be mounted on cowl or any other position where good visibility is secured. On tractor-semi-trailer units, or on trucks exceeding 28 ft. in length, the left front unit must be constructed so as to give a directional signal indication both to the front and the rear."

●

NEW YORK

New RED Reflector Law Passed

ALL cars (passenger car, truck, bus, etc.) operated upon the public highways of New York State during the period between sunset and sunrise, must have at least one adequate and approved red reflector, securely attached to the rear end of the vehicle. This law appears in Chapter 907 of recent New York State legislation, and becomes effective October 1.

●

NEW YORK

Direction Signals Now Compulsory

THE 1936 session of the New York State Legislature passed a new law requiring the installation of mechanical directional signalling devices on *all* motor vehicles (passenger as well as commercial) from which the driver cannot clearly indicate to approaching and following traffic, his intention of stopping or turning.

The new law is in effect immediately and vehicles must be equipped with approved signals not later than September 1, 1936. It reads as follows:

"It shall be unlawful after September 1, 1936, to operate on any public highway or street in New York State, any motor vehicle so constructed or so loaded that the driver thereof is unable to indicate clearly by hand signals to approaching and following traffic, his intention of stopping or turning, unless such a motor vehicle shall be equipped with a mechanical signaling device approved by the Commissioner of Motor Vehicles, or shall fail to cause such device to be maintained, at all times, in good and sufficient working order, or shall fail to use the same when making or preparing to make any stop or turn."

●

PENNSYLVANIA

Direction-Signal Injunction Ruled Out

WHEN the law requiring direction-signals on large bodied trucks and buses was passed some time ago, an injunction was obtained by certain motor vehicle interests, blocking the law. . . . We understand that this injunction has recently been ruled out, so that direction-signals are now compulsory in Pennsylvania on all vehicles having a width 24 inches or more from the center of the steering wheel to the left. These signals must be of the "approved" type and can either be yellow or red in color. The law reads as follows:

"Direction indicators are required on all vehicles having a distance exceeding 24 inches from center of steering column to extreme left edge of body or load. Device to be of *approved type*, yellow or red in color, plainly visible 100 feet to front and to rear, and shall indicate intention to stop or to turn right or left. It must be mounted not less than 18 inches nor more than 6 feet from the ground. The 24 inch measurement will be taken at the level where the driver's arm would normally be extended to make the hand signal, and projection below that point, provided the over-all length of the truck or bus would not render the hand and arm invisible, will not be considered. In effect, if the hand and arm signal is visible at all points on the highway from 25 to 100 feet to the rear of the vehicle without the necessity of the driver leaning from the steering wheel to make the signal, a directional signal will not be required."

●

RHODE ISLAND

Act Requiring the Use of Flares

FLARES are now required to be carried, effective immediately, on public service and all other heavy motor vehicles. The act, approved May 1st, reads as follows:

"There shall be carried on each public service motor vehicle, each commercial motor vehicle with a manufacturer's rated capacity in excess of 2,000 pounds and each combination of tractor and trailer, when it shall be operated on any highway outside of the limits of a city during the period from one-half hour after sunset to one-half hour before sunrise, any one of several types of flares, flaring candles, torches or lanterns or other devices for emergency lighting which have been approved by the chief of the division of motor vehicles, which devices shall be ready for immediate use.

"The operator of any such motor vehicle shall cause such emergency equipment to be kept lighted, in such manner as to be visible for at least 200 feet in front and in the rear of such motor vehicle, during any period between one-half hour after sunset and one-half hour before sunrise when such motor vehicle has become stalled or is in such condition that it cannot be operated on the highway."

●

RHODE ISLAND

Direction-Signals Compulsory

RECENT legislation in Rhode Island calls for the use of directional-signals on motor vehicles in which hand-signalling is impractical. The act, effective May 1st of this year, reads as follows:

"Any person who shall operate on any highway in Rhode Island any motor vehicle so constructed or so loaded that the operator is unable to clearly indicate by hand signals to both approaching and following traffic his intention of stopping or turning, unless such motor vehicle shall be equipped with any one of several types of a mechanical signaling device which have been approved by the chief of the division of motor vehicles, or shall fail to cause such device to be maintained, at all times, in good and sufficient working order, or shall fail to use the same when making any stop or turn, or the owner of any such motor vehicle who shall allow it to be so operated, shall be fined not more than $25.00."

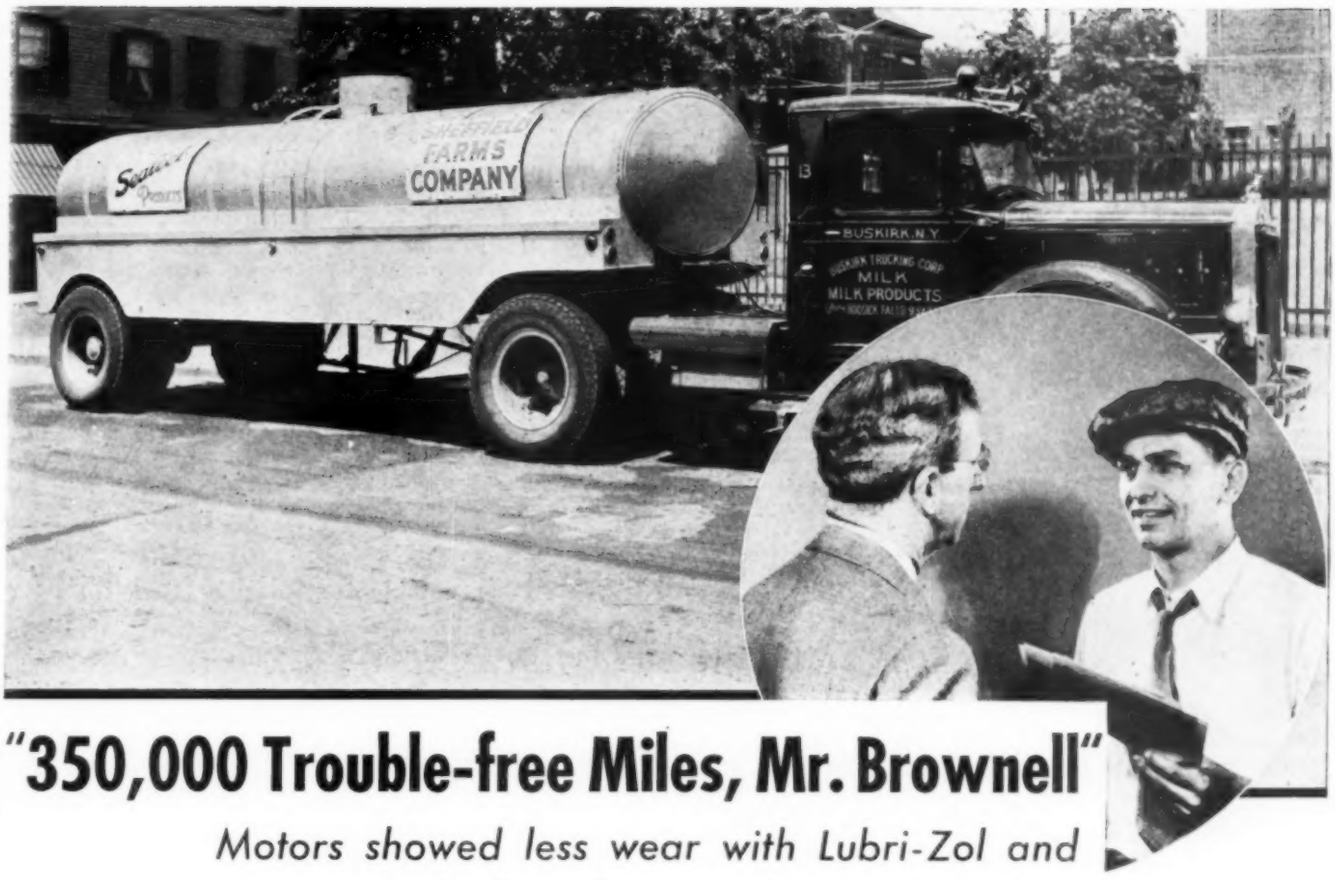
●

VIRGINIA

New Law to Prevent Overloading

THE new overloading measure, passed recently in Virginia, limits overloads on trucks and trailers. It went into effect recently.

This measure provides that the cargo transported on a truck shall not exceed 2.6 times the capacity for which the truck was licensed; and on trailers, 1.75 times the licensed capacity.



"350,000 Trouble-free Miles, Mr. Brownell"

Motors showed less wear with Lubri-Zol and were entirely free from sludge and carbon

. . . Mr. Brownell writes:

"In July, 1934 we started using Lubri-Zol Wheel Bearing Grease and Universal Joint Grease with such success that we then tried their Super Extreme Pressure Gear Lubricant and Extreme Pressure Motor Oil. Not only did Lubri-Zol eliminate our former wheel bearing, transmission and differential troubles, but oil and grease consumption was amazingly lowered.

"A gear box recently dismantled for inspection was perfectly clean and *absolutely free* of oxidized or gummy formations after 350,000 miles of service."

BUSKIRK TRUCKING CORPORATION

Wm. H. Brownell

Pres. & Gen. Mgr.

Lubri-Zol Serves New Field with Remarkable Results

Until recently Lubri-Zol Extreme Pressure Lubricants were used for the protection of precision machinery and instruments. Now offered to truck fleets, they are making savings that fleet operators never thought possible.

The *patented Lubri-Zol process—which blends halogenated hydrocarbons with the finest oils—produces lubricants with film strength 2 to 5 times greater than ordinary oils and greases.

It can be proven that Lubri-Zol safely reduces friction more than any other oil. As a result, Lubri-Zol reduces heat and wear, and assures a protective lubricating film at all driving heats and speeds.

Also, the halogenated hydrocarbons in Lubri-Zol dissolve sludge and gummy carbon binder, and increase mileage between overhauls.

Test Lubri-Zol with the Fleet Record System. This service is available to operators free of charge. Its use will permit you to determine the savings Lubri-Zol can make in your fleet. Write for full details *now*. The Lubri-Zol Corporation, Cleveland, Ohio.

LUBRI
REG. U. S. PAT. OFF.
ZOL

EXTREME PRESSURE LUBRICANTS

* *Fully Protected by U. S. Patents and Foreign Patents*

HERE *and* THERE *in the* TRUCK INDUSTRY

New Cab Designs Introduced By Autocar

A COMPLETE line of streamlined cabs, which makes possible the harmonious streamlining of whatever special body the customer desires, is now announced by The Autocar Company, Ardmore, Pa.

Its two different types are for use exclusively on Autocar Engine-Under-the-Seat chasses. It is available in a standard model and in a streamlined sleeper model. The sleeper cab is distinguished by the economical treatment of space as well as by its practical appointments. Both exemplify the flowing lines of smooth power to which truck owners are showing increasing partiality.

The principal dimensions are:

	Standard	Sleeper
Overall outside length	73"	92"
Overall width, outside at rear	64	79
Overall height, top of frame rail	63	63¼
Inside length from front of dash	53½	72½
Outside width at front post	52	54
Inside width at front post	47½	49⅞
Inside width at seat cushion	58½	....
Bed size	....	21x73¼

●

Engine Manufacturing Picture Available

THE making of a V-type automobile engine is pictured interestingly in a new two-reel "silent" educational motion picture film prepared under the supervision of the United States Bureau of Mines, Department of the Interior, in cooperation with an automobile manufacturing establishment.

The story opens with the arrival and unloading of an ore boat and the storage of the iron ore. These scenes are followed by others that show the charging and tapping of the blast furnaces, the handling of molten iron, charging electric furnaces, adding alloys, building moulds, and carting molten metal. Heat treatment and machining operations in making various parts of the engine are pictured, as well as checking the finished parts for accuracy. Finally, the engine is put together on the assembly lines, tested, and placed in the chassis of an automobile.

Copies of this film in 16-mm or 35-mm sizes are loaned for exhibition purposes, to schools, churches, clubs, civic and business organizatons, and others, upon application to the Bureau of Mines Experiment Station, Pittsburgh, Pa. No charge is made for the use of the films, but the exhibitor is asked to pay transportation charges.

How Trucks Feed the Population

MOVEMENT of butter and eggs to market is becoming increasingly dependent upon highway transportation, it is indicated by a statement issued by the Bureau of Agricultural Economics of the U. S. Department of Agriculture.

The Bureau's compilations reveal that 107,422,000 pounds of butter were shipped into New York, Chicago, Philadelphia and Boston markets by truck last year, that total being 17 per cent of the total receipts at those markets.

Almost one-third of the total shipment of eggs to Chicago, New York, Boston and Philadelphia last year moved to market over the highways, while truck shipments accounted for only 21 per cent of the total in 1934.

●

New Vehicle for Road or Rail

HERE'S something new in transportation! A vehicle that travels with ease on rails and on the highways! Developed after more than two year's engineering research by the Evans Products Company of Detroit, and now in production, this Reo Gold-Crown-powered combination rail-highway vehicle adapts the flexibility and economy of automotive principles to rail use, it is claimed.

Equipped with retractable pilot axles, front and rear, the auto-railer travels on the rails on its own pneumatic tires. It is held there by the flanged wheels on the pilot axles. Exceptional tractive ability and ease of riding result from this principle, it is declared. The vehicle mounts and leaves the rails at any grade crossing.

The Reo Motor Car Company was selected to cooperate in supplying a power plant and chassis for the new Evans-designed product.

This latest development of E. S. Evans adds to a long list of progressive Evans inventions which railroads have adopted during the past twenty years, the announcement further states.

●

Trucks Do Pay Their Way

TRUCKS, comprising only 13.1 per cent of the total number of registered motor vehicles in 1932, paid 24.2 per cent of the sum collected in state registration fees and 24.7 per cent of the state gasoline taxes, according to a recent statement of the United States Bureau of Public Roads.

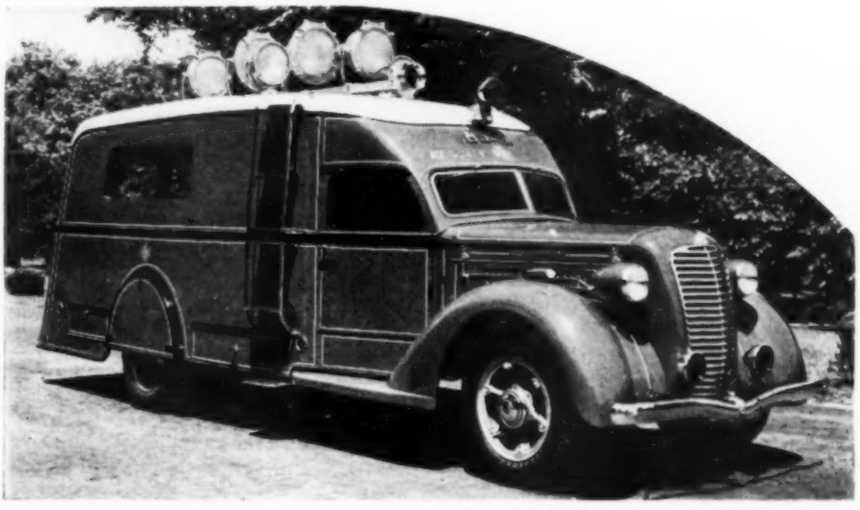
THROUGH the open doors at the rear of the new truck in use as Omaha's rescue squad-car. In the foreground are an acetylene torch, a fire extinguisher, and inhalator, all part of the crew's regular equipment. The center cushions may be raised and lowered to fit the needs of the occasion. In the rear, against the cabinets, may be seen the two small electric fans placed to insure circulation of air in the compartment.

New "Rescue Car" for Omaha

A NEW truck of special construction, one of the most completely equipped mobile rescue-units in the country, has been placed in service by the Omaha, Nebr. fire department. Capable of carrying as many as five accident victims in its spacious compartment, the new truck is, literally, a hospital on wheels. Every instrument required by surgeons for emergency operations is part of its equipment. It has a government permit to carry narcotics.

The new rescue squad-car answers every alarm in Omaha's downtown district and first alarms to all hotels and hospitals within the city. It functions in cooperation with the police department's ambulances on accident calls. It is equipped with a police radio receiving set. The squad-car is manned by a crew of three firemen: the driver, a helper—both trained in first aid methods—and a ranking officer who has been given special medical training.

Omaha business firms and officials made the task of equipping the new rescue-car a matter of civic pride. The medical association donated instruments and supplies. Railroads sent heavy hoisting jacks and chains, tools and implements. The result is a rescue-unit which seems bound to attract the attention of other city governments. The Omaha city council purchased the truck from L. B. Pixley, Diamond T distributor in Omaha.



The vehicle itself is mounted on a Diamond T 212 series truck, a 1½-ton chassis in which the factory installed a 2½-ton model motor. An extra large clutch and oversize transmission went into its construction, to handle added power from the big motor. Factory mechanics inserted a high gear ratio in the rear axle which is capable of carrying the truck—six tons, in its final form—at a maximum speed of 60 miles per hour. After factory engineers had approved the model, the chassis was driven to Kansas City, where an enclosed panel body was built in the Kastler Body Company's plant. For six weeks, designers and plant mechanics worked over minute details of its construction.

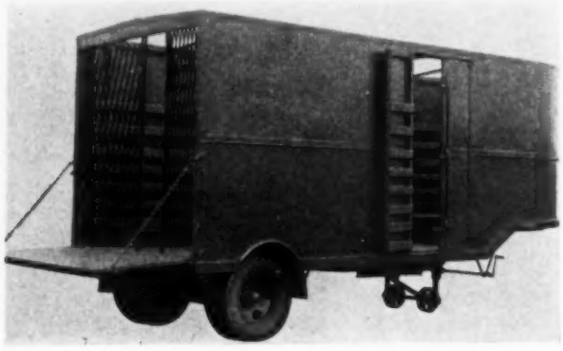
Mounted across the top of the body are six aluminum spotlights of assorted sizes which form a silver crest to the traditional red brilliancy of a regulation fire department unit. These spotlights work from a 5-KW generator run by a Deitweiler power take-off. The generator will develop 5,000 watts of electricity, running at only 18 miles per hour in high gear. Two of the spotlights have 1,000-Watt bulbs; two have 500-Watt bulbs and two have 250-Watt bulbs.

All available space in the body is used. Directly behind the driver's cab on either side of the compartment are the medical cabinets. On the right, two large cabinets are filled with fire department equipment — blankets, hospital bed sheets, etc. On the left are a large drug cabinet and six small medical

(*Please turn to page* 66)

An Interesting Trailer Chassis

THIS picture illustrates one of two unusual trailers built recently by The Trailer Company of America, for Richmond-Carolina Motor Company, Baltimore, Maryland.



Distinctive and unique in many ways, this trailer has been designed with open top, 42 inch double doors on curb side, and wide, folding double gates in the rear for ease of loading and handling general freight between Baltimore, Richmond and the Carolinas.

The trailer frame is a model T-32 Trailmobile, 22 ft. long, with extended front and 14 inch drop. Equipped with manual prop, 32x6 inch 10-ply tires on Chevrolet wheels, Timken tubular axle and Timken brakes, Besler vacuum powered.

The body is of auto-body steel, 22-ft. long, 8 ft. wide, and 6-ft. 6 inches high at the front with movable bow-irons over the open top for tarpaulin support.

The units were sold through Watson Automotive Equipment, Baltimore, and made to the specifications of L. L. Pitt, vice-president and general manager of Richmond-Carolina Motor Company. Mr. Pitt has had many years of experience in the freight transport business, having formerly been Manager of the Baltimore Office of the Colonial Motor Line.

For further information concerning this interesting unit address The Trailer Company of America, Cincinnati, Ohio. . . . And if you mention FLEET OWNER when writing, we'll appreciate it.

●

4,600,000 Car-Truck Output Expected in '36

UNLESS current trends are seriously disturbed, the current year will be the second largest in the history of the automobile industry from the standpoint of production.

Supported by the knowledge that their factory shipments for the first six months have been surpassed only in 1929 and that June sales set a new record for the month, motor leaders attending the annual meeting of the Automobile Manufacturers Association in Detroit, recently, were fairly confident that the industry would be able to finish the year with an output of 4,600,000 cars and trucks.

●

Taxing Gas in Your Tanks Is Illegal

STATES which have harbored the idea of levying special excise taxes to curb the use of gasoline purchased beyond their borders by interstate highway carriers, now find their plans blocked.

As the result of legal action, culminating in a decision by the Supreme Court of the United States, a New Mexico law which sought to impose an excise tax of five cents per gallon under these conditions, has been declared unconstitutional.

The land's highest court held that the statute was "plainly invalid as imposing a direct burden upon interstate commerce," the National Highway Users Conference points out.

●

Safety Depends on Enforcement, Records Show

EVIDENCE that increased policing and intensified enforcement of laws definitely reduce the number of traffic fatalities is presented in official reports from several states, according to the National Highway Users Conference.

Official records of several states, including Alabama, California, Florida, Illinois, Missouri and North Carolina, are cited by the Conference as providing proof that increased patrolling and enforcement promotes highway safety.

In California, for instance, rural road fatalities in five selected counties decreased 20.4 per cent last year, as compared with 1934, with an increase of 14.3 per cent in patrol-hours and despite a heavy increase in motor vehicle registrations.

●

Flexible Mounting for Lights, Etc.

THE too-frequent replacement of lights, reflectors and license plate brackets is obviated with this new device by The Trailer Company of America. Instead of mounting the lights on a rigid bracket, they are mounted on heavy webbing suspended from the frame.

This mounting is stiff enough to suspend the light vertically in correct position at all times, until the light hits a loading platform or other obstruction, when it bends safely out of the way, returning to its original position when the obstruction is removed.

Not designed to completely avoid lamp or lens breakage, this new device, however, will save a large amount of the constant replacement that mounts into considerable expense for every fleet owner.

For further details address The Trailer Company of America, Cincinnati, Ohio. . . . Mention of FLEET OWNER always helps.

Details of Chevrolet's "Economy Run"

WHAT is claimed to be the first truck "economy run" ever to be sanctioned and observed by the American Automobile Association, wherein the gross vehicle weight amounted to as much as twenty tons, took place between the dates of April 20th and May 12th, 1936, when a Chevrolet truck, transformed into a six-wheeler by the installation of a Thornton Four-Rear-Wheel Drive, hauled, with semi-trailer, a payload of more than fifteen tons from Detroit to Boston and back over a roundabout circuit of 2639.9 miles. Fuel cost, oil consumption and road speed were the principal items under observation.

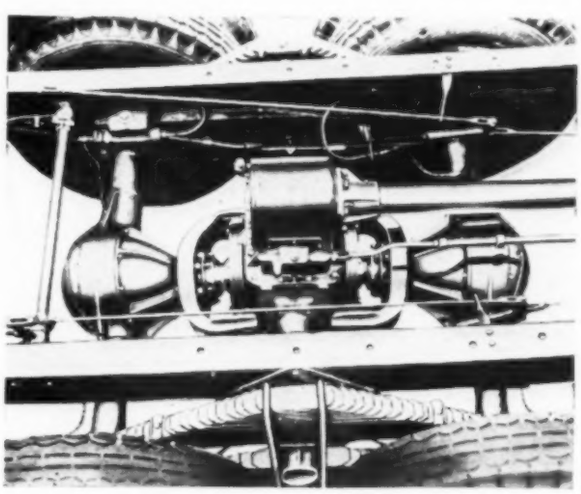
Unlike the usual commercial runs where the vehicle delivers its cargo and returns empty, or carries loads of varying weight, the economy run cost figures include a constant load-factor. The route of the run followed the established highways, no attempt being made to avoid traffic congestion, steep grades, or stoplights. In each of the twenty cities visited, the vehicle was driven into the heart of town, switched about and placed on display for public inspection. Such procedure obviously affected the fuel cost adversely, and presupposes considerably better figures had the run been conducted along easy grades and long stretches of unobstructed highway, and metropolitan congestion avoided.

The route traversed embraced all types of road surfaces such as Tarvia, blacktop, macadam, brick and various grades of concrete pavement. A number of detours were encountered, most of which were macadam or concrete. In various places severely frost-damaged roads were met with.

Steep grades were encountered frequently in the mountainous part of the route. In the Berkshires, Mt. Lebanon, 3½ miles, was negotiated in 33 minutes in low second gear. Jacob's Ladder, elevation 2,300 feet, required a total of 30 minutes in low second. In the Blue Ridge Mountains in Pennsylvania, Tuscarora Mountain, elevation 2,123 feet, was climbed in 58 minutes in low gear. Seidling Mountain, elevation 2,195 feet—a three mile 9% grade—was made in 51 minutes in creeper gear. In the Allegheny Mountains, Bald Knob, elevation 2,906 feet, the highest point of the trip, required 73 minutes in creeper gear. Laurel Mountains were made in 34 minutes in creeper gear; in addition to these mountains, there were numerous other steep hills which required up to 20 minutes in creeper or low second gear. Outstanding were the hills at Girard, Pa., Camillus, N. Y., Avon, N. Y., Beaver Falls, Pa., and Greensburg, Pa. Deceleration was accomplished within limits prescribed by the State requirements, it was pointed out.

The run was accompanied by H. E. Slater, Manager of Distributor Sales for the Thornton Tandem Company, Detroit, manufacturers of the four wheel drive unit, and the driver was "Wild Bill" Cummings, who won the 1934 Indianapolis race, but who had never before driven a heavy-duty trans-

(*Please turn to page* 66)



VIEW showing the Thornton four-wheel-drive, six-wheel unit used on the Chevrolet tractor in the economy run. Note the dual-ratio transmission, located midway between the axles. A third differential is incorporated in the transfer case. Note the trunnion-tube spring suspension.

NO FOOLING!

THEY'RE NEW--*and* FREE!

THE following numbered selections have been chosen by Editor Fischer as this month's trade literature offerings. . . . These booklets are GUARANTEED to be interesting and are offered NOT on the basis of producing inquiries for advertisers, but on THEIR OWN MERITS as handy reference data. . . . If you don't believe it, send for a few of them and prove it to yourself. Do not confuse this page with the voluminous conglomerations found in ordinary (the other fellows') magazines. . . . The coupon is for your convenience. All you need is an envelope and a 3-cent stamp.—H. C. F.

294. LET THERE BE LIGHT! This is a handsomely illustrated catalog which covers a complete line of auxiliary and safety lighting equipment, which should appeal especially to the fleet operator. . . . Detailed instructions are given in it for the proper installation and use of driving-lights, fog-lights, warning-beacons, police-lights, highway-service lights, flood-lights and even garage and shop-lights. . . . Anything that you might desire in the way of lighting equipment for road and shop, you'll be sure to find, illustrated, described and priced in this new (Appleton) catalog. . . . Number 294 on our coupon brings a copy—promptly and without obligation, via one of Mr. Farley's efficient postmen.

•

295. MORE ABOUT POWER BRAKES. . . . Recently, we offered a new Power Brake Service Manual in this department. The requests came in swimmingly and everyone seems to be happy. . . . But it is only fair to give someone else a "break" so this month we are including in this department the power brake literature issued by Midland Steel Products Company. . . . This covers both air *and* vacuum brakes, so that you can shut your eyes and take your pick. Number 295 on the coupon (as the saying goes) brings you a free copy of this literature, free, gratis and without outlay or obligation. (Sort of a long-winded way of saying it, don't you think?)

296. COLLOIDAL GRAPHITE—What it is and how it works. . . . Here is a new booklet that tells in simple language just the part which colloidal graphited lubricants play in automotive lubrication. . . . In view of the widespread interest in this subject, this booklet should fill a long-felt want, since it answers the many questions which maintenance men usually ask. . . . Number 296 on our coupon below brings a free copy of this booklet promptly, by mail.

•

297. KEEPING TRUCK COSTS . . . . This free book provides all the necessary forms to enable a truck operator to keep a complete year's record of motor truck operation. . . . It contains facilities for keeping both daily and monthly cost schedules—fixed charges and operating costs, too! . . . This book is published by Autocar. . . . If you haven't seen it, we'll be glad to see that a free copy is *mailed* to you, regardless of the make of trucks you operate. . . . Just mention Number 297 on our coupon below.

•

298. BATTERY SERVICE MANUAL . . . Give us credit for correctly representing this book. It's title is just what it is, since it contains chapters on Automotive Electrical Check-ups—Selection of the Right Size Battery—Charging Data—Battery Capacities—Battery Repair—Generator Adjustment—and others. . . . There's no advertising or sales-promotional material in this manual. . . . It's interesting and will be supplied *free*, if you mark Number 298 on our coupon below. . . . This battery manual is hot off the press!

•

299. ALUMINUM TRUCK BODIES . . . The newest book on this subject is a 28-page manual that gives all data covering aluminum shapes available for building truck and bus bodies. . . . All standard, stock structural shapes, such as channels, I-beams, carlins, mouldings, corner-posts, etc., are given in cross-section, with full dimensions and weight data. . . . Fleet operators who have been thinking about building special bodies will find this data book a very handy reference guide. . . . Ask for Number 299 on our coupon below, and a copy will be *mailed* to you right away; free, of course.

•

300. DIETZ LIGHTING EQUIPMENT . . . Here is a brand new catalog and data book, just put out by Dietz. In fact, the ink is still wet. . . . In addition to giving you a fine idea of all Dietz products, including headlights, searchlights, spotlights, stop-and-tail-lights, direction signals, flares, garage-lights, etc., it contains a complete table showing special lighting equipment requirements in *every* state in the Union. . . . The last-mentioned chapter makes this book highly desirable for reference purposes. . . . Number 300 on our coupon brings a free copy promptly. No obligation.

•

301. LOAD AND INFLATION TABLES. . . . Printed in blue ink on heavy stock, these tables come in the form of posters which you can hang on the wall of your garage or terminal. . . . They give all tire sizes and show carrying capacities, correct inflation in pounds, load and service diagrams, and other data illustrating the effects of overloading on the service of pneumatic truck and bus tires. . . . If you have these tables so posted, your drivers, supervisors and dispatchers will have a constant reminder to look after their tires. . . . These posters will be supplied free. . . . Ask for them by mentioning Number 301 on our coupon below.

•

302. DATA BOOK ON UNIT HEATERS. . . . Now is the time to think about properly heating your garages and shops, for when Fall comes, isn't Winter sure to be not far behind? . . . A 48-page book has been issued, showing the proper way to heat fleet buildings. If you are now struggling along with steam-pipes, strung along walls, that do little more than help to melt the snow off the roof, we'll guarantee that you'll open your eyes when you see how easily large buildings can be heated by unit heaters that *properly* distribute the heat. . . . For a free copy of this interesting unit heater book, just mention Number 302 on our coupon below. It comes by *mail*, like all other items on this page.

The Editor, FLEET OWNER, ... 1936
90 West St., New York, N. Y.

Kindly send me without cost or obligation the following literature mentioned in the August issue. (Order by number)

....

....

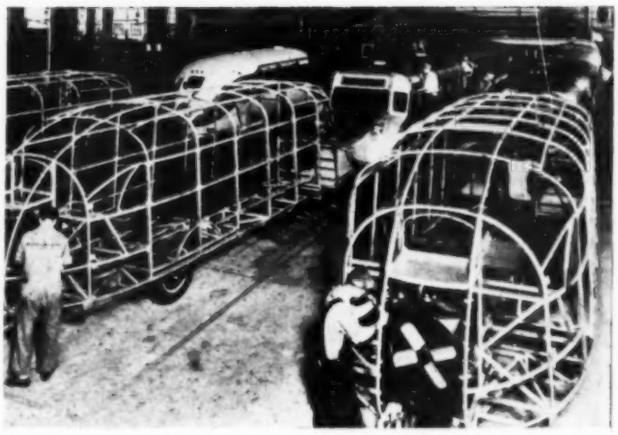
Name of Fleet .....

Address .....

City and State .....

Your Name ..... Position .....

Number of Vehicles Operated .....



Gar Wood Enters Motor-Coach Field

NEW line includes 20 and 24-passenger streamlined jobs of novel construction. . . . Welded tubular steel serves as entire structural framework. . . . Ford V-8 engine, mounted at the rear, is the power-plant.

GAR WOOD Industries, Inc., is now manufacturing a new line of 20 and 24-passenger streamlined motor coaches. Prices range from $4,500 to $5,200, depending on the interior seating equipment and accessories. It is said that the design and construction are revolutionary.

Welded tubular steel is used for the entire structural framework. There is no separate chassis frame; the body unit serves as both body and chassis frame in one integral section. All mechanical parts are attached directly to the body unit.

The motor is placed at the rear, in a fore-and-aft position, driving the axle through spiral-bevel gears. Light weight, economy of operation, smoother riding qualities, less inside noise, no inside fumes or odors, better driving vision, and quicker acceleration are some of the many features pointed out by the makers.

Stanley E. Knauss is manager of the new motor-coach division. "For the time being, we are going to confine our sales activities to within a 1,000-mile radius," Mr. Knauss said. "Later on, we will expand nationally, to eventually cover the entire country."

The body-frame of the Gar Wood motor coach, closely resembling the frame of an airplane fuselage, is fabricated with light-weight tubular steel. The completed body-frame unit possesses great structural strength and the necessary factor of safety, it is claimed. No bolts, screws, rivets or wood are used. All body unit joints are welded. This tubular framework is later covered with a smooth metal sheathing.

All mechanical parts and units used in the construction of the Gar Wood motor coach are standard and are supplied by motor car manufacturing concerns.

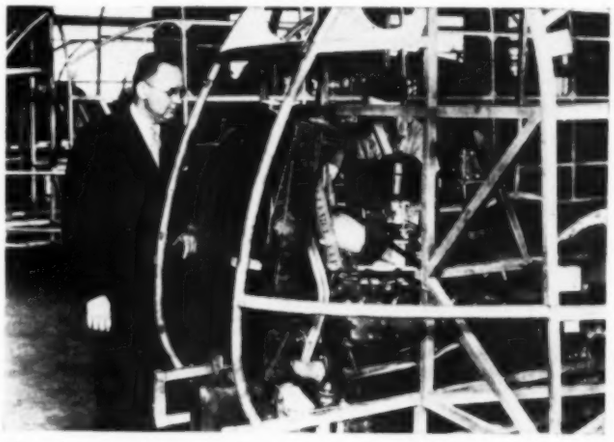
A standard Ford V-8 engine is mounted at the rear, with the fan facing aft. The result is a noticeable absence of noise, vibration and gas odors in the passenger compartment, it is claimed. The placing of the motor at the rear is said to afford greater traction especially on wet, icy, slippery and snow-covered roads. Better driving vision is provided because the driver sits nearer the front of the vehicle.

Luxurious reclining chairs for 20 passengers are standard equipment in the coach for inter-city service. The suburban coach accommodates 24 passengers. The seats are arranged so as to eliminate the objections frequently voiced by passengers when they have to sit directly over the wheel-housings in conventional buses.

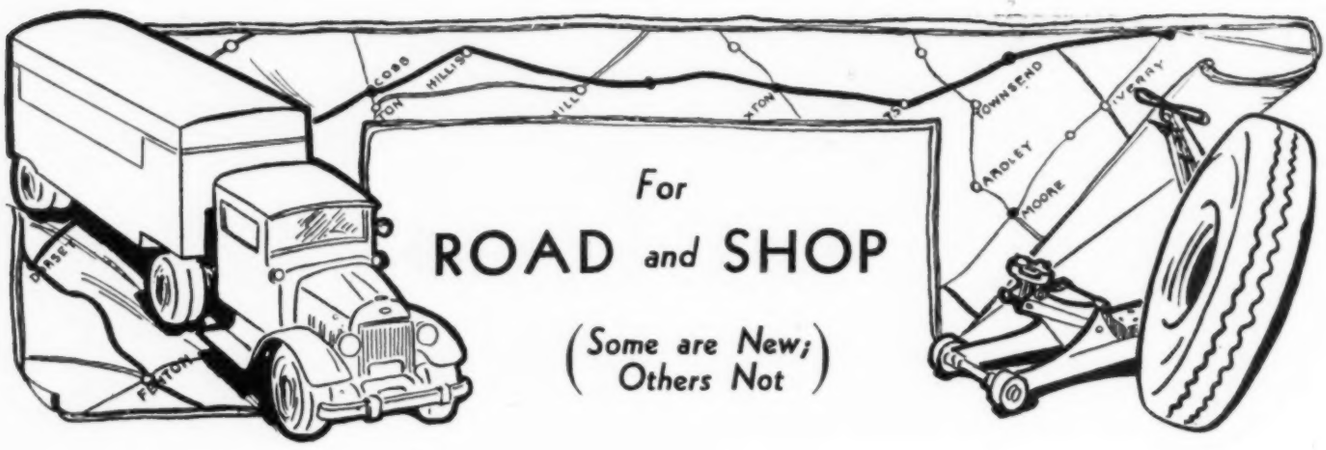
Airplane type, two-piece, sliding windows insure adequate ventilation and plenty of air en route and, in addition, permit all passengers an unobstructed observance of the countryside.

The Gar Wood motor coach was designed with three fundamental objectives in mind. First, the vehicle had to be lighter in total weight than the present-day bus and yet possess sufficient strength without sacrificing passenger capacity and comfort. Second, it had to provide a new degree of riding comfort and passenger appeal so that it would attract an increased patronage for the owner-operator. Third, it must be rugged and withstand severe daily use, and the maintenance and operating costs must be low.

After a year of thorough testing by the (*Please turn to page* 66)



This close-up shows the Ford V-8 engine, which is mounted at the rear, in a fore-and-aft direction. Standing at the left is Stanley E. Knauss, manager of the motor-coach division, Gar Wood Industries, Detroit, Mich.



For ROAD and SHOP

(Some are New; Others Not)

"Kralinator" Oil Conditioner

A NEW type of oil conditioner for installation on engines is announced by Olixir Products Co., 895 Niagara St., Buffalo, N. Y. Here is the maker's description:

"The Kralinator is a self-contained unit, easily installed on any internal combustion motor, which automatically and continuously separates the insoluble from the soluble portions of sludge built up in the motor by oxidation, moisture and heat.

"Insoluble matter (carbon, iron, etc.) petroleum acids, water and other foreign substances, are collected and trapped in the Kralinator and withheld from further circulation.

"Soluble materials—representing the oiliness and other valuable portions—are dissolved, reconditioned and returned to the oil supply.

"This process is known as Kralinating. It is done automatically while the truck or tractor is in operation. Applicable to all types of motor vehicles, it is especially needed by trucks, buses, tractors, and Diesel powered units."

In operation, the oil passes from the crankcase through the conditioning element under normal engine pressure. The physical conditioning of the oil takes place in the impregnated element, where carbon is absorbed and all other foreign matter trapped in the cellulose content, it is claimed. The useful portion of the oil, physically strengthened and fortified with an added solvent property, is returned to the crankcase.

The only attention required is to replace the inexpensive element from time to time, when the oil gauge shows black. For further details, prices, etc., address Olixir Products Co., 895 Niagara St., Buffalo, N. Y. . . . Mention of FLEET OWNER is always appreciated.

•

Electrical Circuit Tester

PRESENT-DAY importance of scientific tune-up and test of automotive electrical systems has led to the development of a new product by The Lantz-Phelps Corporation, Dayton, Ohio.

The L-P Electrical Circuit Tester will spot trouble quickly and accurately, it is claimed. Short-circuits or current leaks are indicated by the neon-glow-light in the center of the instrument. By injecting the full voltage into the faulty part of the system, a spark will flash at the point of weakness.

This new device tests condensers, rotors, breaker points, distributor caps, coils, spark plug wiring, or any part in the ignition, lighting and starting system and generator. The use of this instrument is almost unlimited in testing any electrical circuit for shorts, opens, grounds, leaks, partial shorts and continuity, and it is available at low price, the makers declare. Write The Lantz-Phelps Corporation, Dayton, Ohio, for complete details. . . . Mention of FLEET OWNER always helps.

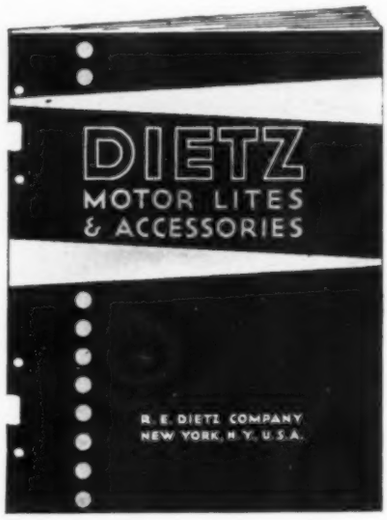
Dietz Lighting Catalog

THIS is a *new* catalog, recently issued by R. E. Dietz Company, pioneer lamp manufacturers, New York, N. Y.

This catalog is chock-full of data covering electric headlights, searchlights, spot-lights, flood-lights, garage-lights, direction-signals, mirrors, reflectors, marker-lights, stop-and-tail lights, flares, etc.

A feature of this new book is a table of emergency lighting equipment as required by every state in the Union. Because of the changes that are constantly taking place in lighting and signaling equipment requirements for trucks and buses, the new catalog should prove interesting for reference.

Many of the latest models of "approved" equipment are illustrated, described and priced, with sufficient variety of styles and types to meet every need or preference.



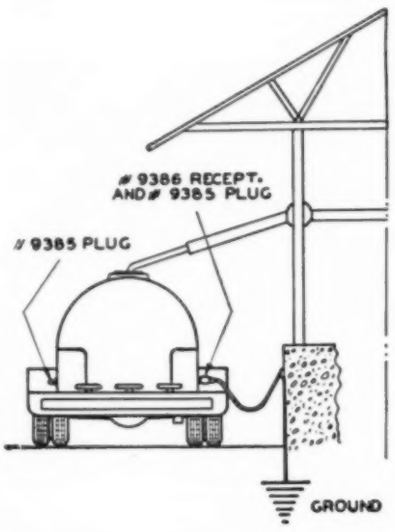
For your free copy address The R. E. Dietz Company, 60 Laight St., New York, N. Y. . . . Mention of FLEET OWNER when writing for this catalog, will speed up the service. . . . We'll appreciate it, too.

•

USE the handy coupon for ordering new literature. It's on page 60 of this issue. . . . This coupon is for *your* convenience!

Tank Truck Ground Plug

CERTAIN states require grounding plugs for truck tanks, at all gasoline stations and bulk plants, when trucks are being loaded or unloaded



of hazardous liquids. Grounding plugs are also specified by safety departments of leading oil companies, as a safety measure, regardless of state regulations.

The Appleton Auto Tank Truck Grounding Plug and Receptacle, illustrated here, was developed for this purpose. It will ground static charges of electricity which may accumulate in steel tanks. It was especially designed so that if the truck happens to be driven away while the plug is connected, the contact is broken without injury to the plug, receptacle or cord.

For further details address Appleton Electric Company, 1714 Wellington Ave., Chicago, Ill. . . . Mention of FLEET OWNER always helps.

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Load, Inflation Tables

OF interest and day-to-day value to all owners and operators of trucks and buses is the new "*Load and Inflation Pressure Table for Trucks and Buses*" recently published by The B. F. Goodrich Company, Akron, Ohio, and now available free on request.

Printed in blue ink on heavy white stock, the posters 14 by 22 inches list the tire sizes, correct inflation in pounds, and carrying capacity in pounds on all truck and bus tires, as well as load and service diagram illustrating the effects of overloading on the service of a pneumatic tire.

The tables, in this attractive poster form are believed ideal for placement in fleet garages, loading terminals, etc., where drivers and supervisors can be reminded to check their tire information. Copies of the table are available free upon request to The B. F. Goodrich Company, Akron, Ohio. . . . Mention of FLEET OWNER when writing, will insure your receiving free copies promptly.

New Exide Truck Batteries

FOUR new commercial types of Exide batteries for trucks are announced by The Electric Storage Battery Company, Philadelphia, Pa. These new Exides have been put on the market to meet the demand for batteries especially designed for service on light, high-speed trucks where the conditions are different from those under which passenger cars are operated.

Each battery is equipped with Mipor separators and the Exide slotted-rubber plate protector — a combination that, according to the manufacturer, will give long life and high starting-capacity.

Mipor separators resist heat, an important feature for batteries used in trucking service where long daytime runs and overcharging are the rule rather than the exception, it is claimed. Likewise the slotted-rubber

plate protectors are said to help hold the active material in the grids and lengthen the life of the plates. This also is an important feature because of the tendency of excessive charging, so common in trucking service, to loosen the active material.

Other features of the new Exide commercial types are extra-high thick plates 5/8" higher than standard, and positive plates of the same thickness as negatives. Extra electrolyte space is provided, which lessens the frequency with which the battery must be watered; and a quarter-turn vent plug contributes a time-saving factor when such watering is necessary.

The plates are bevel-cornered with feet; the intercell connectors are extra heavy; and the post seals, corrosion-proof. The batteries are assembled in heavy-duty, genuine hard-rubber containers equipped with handles.

The new Exide commercial type batteries equal or exceed the S. A. E. and U. S. Government standards for capacity and life, it is declared.

The specifications of the four types are:

Type	XHMR-13	XHMR-15
Length	9-1/16"	10-1/4"
Width	7-1/16"	7-1/16"
Height	9-3/8"	9-3/8"
Weight	46 lbs.	52 lbs.
Capacities		
20 Hr. Rate	101 A.H.	118 A.H.
300 Amps. at 0° F. for	2.9 min.	4.0 min.

Type	XHMR-17	XHMR-19
Length	11-1/2"	12-5/8"
Width	7-1/8"	7-1/8"
Height	9-5/8"	9-5/8"
Weight	59 lbs.	67 lbs.
Capacities		
20 Hr. Rate	135 A.H.	152 A.H.
300 Amps. at 0° F. for	5.0 Min.	6.1 min.

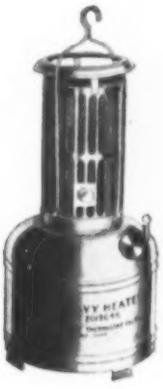
•

For Keeping Motors Warm

HERE is an interesting device for keeping motors warm in cold weather. It is a kerosene-burning "stove" that is guaranteed to be absolutely safe, having been approved by fire marshalls in several cities.

Known as the Bunsen-Davy Motor Heater, the device produces a Bunsen-burner flame, protected by a "Davy Screen" of the type used in miner's lamps. It is designed to be hung on the radiator tie-rod, under the hood, thus keeping the engine warm by the heat which it throws off, to provide quick, easy starts in winter.

The heater is easily lighted without removing the screen. It is entirely self-contained and burns kerosene or coal-oil, and costs about 2c

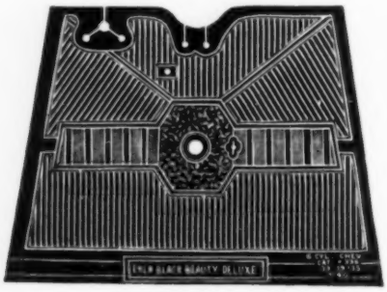


per day to operate. No pressure is required.

For further details and information as to list price and discounts address Bridgeport Thermostat Company, Inc., Bridgeport, Conn. . . . Mention of FLEET OWNER always helps.

Replacement Floor Mats

TWO new lines of replacement floor mats are announced by the Eclat Rubber Company, Akron, Ohio. The de-luxe model is shown here; there is another popular-priced line known as the "standard" grade.



Both lines of these mats are offered in the semi-fitted and universal types, to take care of practically all cars, including late models.

Three sizes of universal rear compartment mats are also featured by this company. The de-luxe line is made of deeply corrugated rubber, while the standard line has a herringbone pattern. Both lines are available in the all-rubber and felt-back types.

For further information, prices, etc., address The Eclat Rubber Company, Akron, Ohio. . . . Mention of FLEET OWNER, when writing, sometimes speeds up the service and always helps.

•

"How to Weld Aluminum"

THE welding of aluminum has been a matter of wide and continued interest for a good many years, and this booklet represents an effort to consolidate and bring together under one cover the fundamental information now available. The subject is treated in an interesting and comprehensive fashion that is easily readable. Numerous illustrations and many diagrams are included.

The properties of aluminum affecting welding technique form the subject of the first section. The physical

characteristics of aluminum necessitate a welding technique just as easy as, but somewhat different from the well-known steel welding procedures.

Primarily, the metal's rate of heat conductivity, its color characteristics when heated, its change in physical properties when hot, and the easily formed, high melting point oxide are the facts which determine the welding procedure. How to take care of these factors when fabricating or repairing aluminum products is essentially the essence of this booklet.

This booklet is available for distribution to interested readers. Copies will be furnished without charge upon request. Write to Linde Air Products Company, 205 E. 42nd Street, New York, N. Y. . . . And if you mention FLEET OWNER it will speed up the service.

•

Light-Polarizing Glass

A NEW type of glass called "Polaroid" was recently introduced. It looks like clear, colorless glass. Light that passes through it looks like ordinary light. The light rays, it is claimed, are actually combed out or "polarized," so that all the vibrations of rays occur in one plane, making it possible to control such light.

In the accompanying illustration, two sheets are being held, one over the other. Turning them in various relations to each other will make their transparency perfectly clear or perfectly black, depending on how

they are turned. Here, the laboratory technician is holding two sheets of Polaroid with their polarizing axes at right angles, blocking out all of the light. He can vary the light at will simply by turning one of the plates.

Some of the things claimed for this new glass include the complete elimination of glare from automobile headlights; the possibility of life-like, three-dimensional movies; the possibility of spotting defects in design of metallic structures; and others. The inventor of Polaroid is Edwin H. Land, Boston, scientist. The Land-Wheelright Laboratories, 168 Dartmouth St., Boston, Mass., has furnished the above brief description.

•

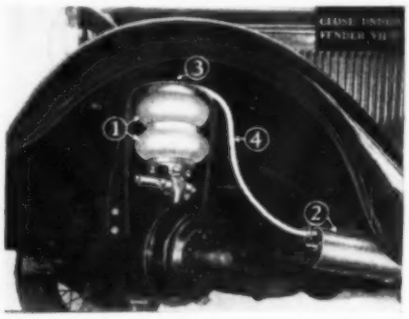
Firestone "Air-Springs"

A NEW principle of automobile suspension providing for rubber "springs" inflated with air, was introduced recently by The Firestone Tire & Rubber Company, Akron, Ohio.

The Firestone Air-Spring consists of an especially developed rubberized fabric bellows (1), which is inflated with air to carry the desired load.

The bellows operate automatically in connection with an air reservoir (2), by means of a pendulum shock-absorption valve (3). The bellows and the reservoir are connected by a metal tubing (4).

Advantages claimed by the maker



are. easier riding, elimination of body roll when rounding corners, shock-absorption control that will erase road irregularities, facilities for controlling the softness of riding quality, and quieter operation.

The method of mounting these air-springs places the major portion of the load directly on the car's knuckle forging, thus relieving the load on the linkage bearings and hence reducing wear and lubrication difficulties, it is declared.

•

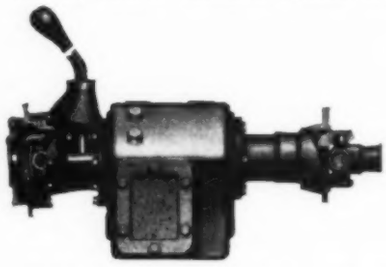
Watson Transmission

IN order to meet the varying requirements of modern trucking, a transmission has been designed that gives three axle ratios to any truck, instead of the conventional one axle ratio. It is said to be particularly applicable in trucks of 1 to 3 tons.

This unit, known as the Watson-Brown-Lipe auxiliary transmission, is installed directly behind the factory-installed transmission. It is said to provide a selection of gear ratios not available in standard transmissions.

For instance, 52% more power is available in the low axle ratio, while in the high axle ratio 23% less engine revolutions are necessary at any given road speed. The intermediate ranges offer a selectivity of gear ratios designed to meet every requirement of the truck operator.

In all, twelve forward speeds are



available in this transmission. It is sold by H. S. Watson Company of San Francisco, through authorized distributors.

For further details address H. S. Watson Co., 531 4th St., San Francisco, Calif. . . . Mention of FLEET OWNER will speed up the service.

duPont Cellulose Sponge

A NEW type of artificial sponge has recently been developed by E. I. duPont de Nemours & Co., Wilmington, Del.

This sponge is made from pure cellulose and is remarkably strong

and durable, the makers state, yet it is soft and pliable when wet. It is claimed that this sponge will absorb 20 times its own weight of water, and may be used for drying when wrung out.

Other features are that it will resist boiling water and may be sterilized easily. It is not affected by cleaning chemicals, such as lyes, dilute acids, etc., and may also be used for toilet purposes.

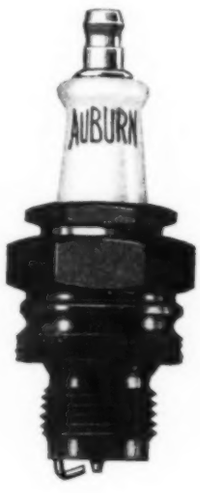
Fleet operators will find this sponge suitable for washing and drying truck and bus bodies. It comes in several commercial sizes to fill practically every cleaning requirement. For further details address "Du Pont," Wilmington, Delaware.

•

Improved "Auburn" Plugs

ONE of the features of the improved line of Auburn Spark Plugs is the "Heat Range" system, which now provides a spark plug of the proper characteristics for any motor—hot-running or cold-running.

This addition to the well-known Auburn line will probably interest operators of late commercial equipment,



such as Ford V-8's, International Harvester, White, Mack, etc. It is claimed that these plugs are ideally suited to tractor-trailer operation, where high and continued speeds are required.

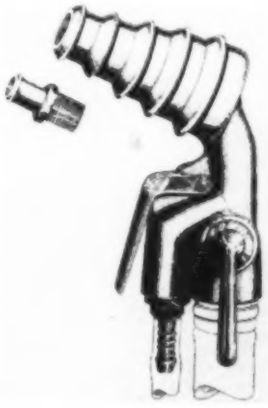
A large wall-chart giving complete spark plug specifications for all cars, trucks, tractors and other engines is now ready. It explains the Auburn "Heat Range" system in full detail and also indicates the proper type of plug for each motor. For your free copy Address Auburn Spark Plug Co., Inc., Auburn, N. Y. . . . Mention of FLEET OWNER will speed up this service.

•

Eveready Flushing Gun

AS the follow-up to National Carbon Company's recent product, Eveready Cooling System Cleaner, there comes the announcement of the Eveready Flushing Gun, illustrated here.

Powerful air and water pressure is claimed to be a logical means of removing loose rust, hard scale and sediment from the cooling system



after a cleaner has been used. Now comes the Eveready gun, which is light, compact and simple to operate, with control for both air and water pressure conveniently located on the handle.

It has a convenient angle between nozzle and handle, and a short nozzle head for close clearances; a special air hose fitting to increase the blast, and hair-trigger control of air pressure. A detachable nozzle fitting is provided for flushing hot-water heaters.

The new Eveready Flushing Gun is so constructed that it can be quickly dissembled for rapid cleaning if necessary. . . . For further details address National Carbon Company, 30 E. 42nd St., New York, N. Y. . . . Mention of FLEET OWNER always helps.

•

Oxwelding Brass and Bronze

AVAILABLE on request through The Linde Air Products Company, 30 East 42nd Street, New York City, is a 12-page, excellently illustrated booklet on the oxy-acetylene welding of brass and bronze.

There are two main sections to the booklet. The first is devoted to the technique of fusion-welding brass and bronze. For ornamental work, it is essential that the welds have exactly the same appearance as the base metal. Furthermore, the weld must be so made, and the material in it must be such, that, as time progresses, the weld will remain indistinguishable from the base metal.

The securing of this uniformity of appearance depends upon the flame adjustment used, and upon the constitution of the base metal and the welding rod. Methods of determining the type of flame and welding procedure in general and special cases are given. For the consideration of metallurgists, there are included three photomicrographs of the weld and base metal, together with a full description and explanation.

The booklet also contains an illustrated section on the welding of commercial yellow brass pipe. Joint design and welding technique are discussed in detail. Three tables give data on welding time, material consumption, and tensile strength of welds made in various positions. For anyone engaged in or interested in welding brasses or bronzes this booklet holds a very real value. Copies will be sent on request without obligation. . . . You'll mention FLEET OWNER, won't you?

•

New Battery-Charging Rack

A NEW battery-charging rack, accommodating any standard wall-model garage-type Tungar charger, together with four all-rubber trays holding three six-volt batteries each, has been introduced by the General Electric Company's Appliance and Merchandise Department, Bridgeport, Conn.

Occupying but four square feet of floor space, it is compactly designed and sturdily constructed of steel, protected with acid-resisting paint. A complete set of battery jumpers for twelve batteries is included with each rack.

For further details, literature and prices, write to Merchandise Department, General Electric Company, Bridgeport, Conn. . . . Mention of FLEET OWNER always helps.

New Rescue-Car for Omaha

(*Continued from page 57*)

cabinets. In one of these small units is a standard hospital-size electric sterilizer which operates off the generator. The cabinets contain such necessities as ether masks, abdominal needles, an amputation knife, surgical gowns and masks to accommodate a working crew of six doctors and nurses. In case of a serious accident involving many persons, the truck can be made a field hospital, with operating table and equipment on hand for a full staff of physicians.

The floor compartment which ordinarily holds extra tires on other trucks is devoted to carrying equipment, which can be removed quickly. A surgeon standing in this compartment finds his patient inside the rescue-car at exactly the same height he would be on an operating table in a hospital. Stooping to avoid the ambulance's low top is done away with by this method.

If the rescue-car is called to a train wreck in the country some distance from an accessible road, its crew can string out a thousand feet of electric cable to flood the scene with light furnished by the power generator.

Its equipment includes two tannic acid guns for treating victims of burns. There is an oxygen tent for pneumonia, diphtheria or heart stroke victims, where minutes required rushing a person to the hospital count heavily. A standard inhalator outfit is always on board.

Often before the doctors can go to work, however, there is the problem of reaching the victim. Suppose he is crushed beneath an overturned car. Suppose a drowning person's body hasn't come to the surface of the lake or river. Perhaps someone is trapped, injured, in an upper story of a burning building. The rescue-car has the answer to all these situations. It has ladders, crowbars, chisels, shovels, wrenches, hacksaws, pipe cutters. Curiously, one tiny compartment contains an honest-to-goodness hunting knife.

Handiest to reach and most conspicuous from the open doors at the rear are two large acetylene and oxygen gauges for operating a cutting torch. Working from the truck, the crew has a 50-foot radius in which to operate the cutter.

The crew also has a diving helmet as part of its list of accessories. It will allow descent 50 feet below the water's surface. In another compartment the truck carries a regulation marine life gun and a 500-foot life line which has several uses on land as well as water. Three gas masks are standard equipment. Two twenty-ton hydraulic jacks are carried on every run.

Behind the medical cabinets are body-length cushioned seats along both sides. These may be adjusted to transform the truck into an invalid coach and when cushions in the center aisle of the compartment are raised, five persons may be carried in invalid fashion.

Sealed panel windows allow plenty of natural light in the compartment and there are six electric sockets available for artificial lighting. Windows at the rear are adjustable. Two electric fans attached to the medical cabinets keep the air circulating. There are four exterior body compartments for equipment and extra tires.

Before putting the new rescue-car into service, fire department officials put it through a series of tests and demonstrations not only to acquaint the crew with its handling, but to prove to their own satisfaction just how it would meet emergencies. They raced it at top speed along smooth highways to find if it had a "feel" of the road. They took it across rough pastures and country roads, with officials riding in the compartment where an accident victim would be carried.

Details of 20-Ton Economy Run

(*Continued from page 59*)

port. The technical observations were made for AAA by E. Von Hombach, Stanley Reed and Harold Baxter.

The tractor used in the test was a Chevrolet 1½-ton Model B, equipped with a Thornton-Tandem four-rear-wheel-drive unit, and towing a 22-foot semi-trailer with tandem axles, dual tires being used all around. The payload, of concrete blocks as shown in the picture, amounted to 30,620 pounds, while the combined vehicle weight (empty) amounted to 6,700 pounds for the tractor and 4,780 pounds for the semi-trailer, making a gross vehicle weight of 42,100 pounds.

Braking equipment consisted of Bendix-Westinghouse automotive air brakes. The trailer used was a Trailmobile, the fifth wheel being the Austin, gravity-cushioned type. Measuring equipment included a Stewart-Warner Tachometer and a Veeder-Root Hub-Odometer. Eighteen Goodrich tires, 32 x 6, 10-ply, were used.

Space does not permit a full report of all factors entering into the cost of the run. The total test miles were 2,639.90, done on a fuel consumption of 515.95 gallons, or an average of 5.117 m.p.g. But three quarts of oil were used. Approximately 39.3 quarts of water were added. The total gasoline cost for the run was $95.56; the oil cost was $1.11. About 1.4 pounds of gear lubricant were used in the transfer case, the cost of this being but 35 cents.

The Chevrolet Motor Company, Detroit, Mich., will be glad to send you the complete details of this "economy run", broken down more thoroughly with regard to costs, etc., than we have done here. We'd suggest that you write to Mr. W. E. Fish, manager of their truck division, if you'd like the complete figures. There's no obligation, of course. . . . Mention of FLEET OWNER always helps.

●

Gar Wood Enters Motor-Coach Field

(*Continued from page 61*)

designer and also by the operators who had driven the Gar Wood motor coach under actual daily operating conditions, the Gar Wood motor coach was put into production.

In a recent, actual test of the Gar Wood motor coach, a prominent bus operator cut approximately two hours from one of his time schedules, it is declared. This operator was considerably surprised at the result. He could not account for the reduction in driving time because he had operated the bus in the usual way and at the same rate of speed over a regular route. However, it developed, that because of quicker acceleration he was able to progress from a dead stop to cruising speed in much less time than he had been able to do previously, according to the manufacturers.

Volume production has already been attained and this volume is being increased rapidly. Deliveries are now being made in the United States and in Canada. The price range is from $4,500 to $5,200, depending upon passenger seating capacity and equipment. One of the desirable features is quick acceleration.

In addition to the Ford V-8 engine, many of the mechanical parts used in the new unit are composed of units interchangeable with popular-priced automobiles. Thus parts stocks can be located almost anywhere, the manufacturers point out.

For further details, address Gar Wood Industries, Inc., Motor Coach Division, Detroit, Mich. . . . Mention of FLEET OWNER, when writing, will be appreciated.

Safety, Convenience, Cleanliness

(*Continued from page* 18)

inspection.

When Shell set out to eliminate all possibility of cans becoming water-stained or dusty, there was no suitable material available in the automotive market. One of the better known makers of ice boxes was called into consultation and thus refrigerator doors were adapted to oil deliveries.

Another noticeable feature is the large door in the rear which gives access to the faucets. These doors measure 36 by 48 inches, and are hinged at the top. When opened they form a roof 6 feet 3 inches above the ground, thus giving protection to the driver when making a fill on a snowy or rainy day. This feature is of particular interest to fleet operators since it is designed to eliminate the hazards caused by drivers sometimes leaving the truck while hosing off.

●

How 144 Fleets Recondition Cylinders

(*Continued from page* 38)

for the bottom of the bore, cloth containers, washing with kerosene, gasoline, water and air. In other words, fleet men seem to be "cleanliness-conscious" when doing this type of work; and it pays big dividends, too.

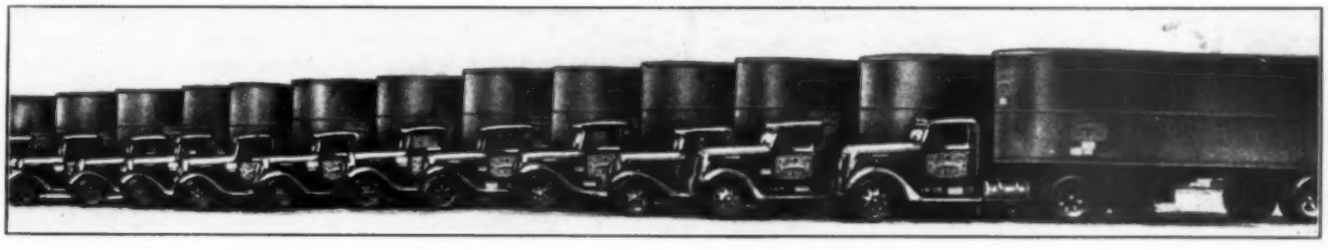
And here is where we come to something still more interesting. We asked for OPINIONS as to which method of cylinder reconditioning is best for fleet operators. The answers do not necessarily reflect present practice among fleet operators, but they do represent what fleet operators THINK, or have been led to believe, as to which method of cylinder reconditiong is best. Here they are:

Reboring with portable boring-bar—38. Reboring with portable boring-bar *and* finishing with hone—28. Grinding on large cylinder grinder—36. Grinding and finishing with hone—2. Honing cylinders only—4. Our minimum amount of comment on the above is that the boring-bar method seems very popular, due no doubt to the fact that it can do a satisfactory job, either with or without a hone afterwards; and also that it is a practical tool, due to the fact that it is not necessary to remove the cylinder block from the chassis, the boring-bar being bolted on, right in the vehicle, thus saving several hours of labor.

As to the capabilities of the cylinder hone, we would rather not comment. As before stated, there are several schools of thought along these lines, and the fleet men participating in this particular survey do not seem to belong to the "honing school" except as a finishing operation. In the event that this "survey" may not be representative, we shall be glad to hear from anyone else who has surveyed this field; perhaps his findings might be different.

Another question called for OPINIONS. We asked, *"Which make of cylinder reconditioning equipment do you consider best?"* The answers to this question are another "one of those things" which we can't reveal here. Such meaty, confidential information only goes to those who participated in the survey. Again we might say, one make of equipment seemed to be more popular than the others; so much so, in fact, that it literally stuck out, like a sore thumb on a fellow with hitch-hiker's paralysis. (*Please turn to page* 68)

Larcoloid! The Perfect 1-HOUR DRY ENAMEL FOR DURABILITY and ECONOMY!



LARCOLOID, brushed on finish, protects the fleet, pictured above, of the Fruit Belt Motor Service Co. of western Michigan.

Larcoloid is durable because:

It combines the most desirable characteristics of both lacquer and enamel.

It dries thoroughly in **1 hour.**

Brush or spray it produces a durable lustrous finish without the necessity of expensive rubbing or polishing.

It is highly resistant to alcohol, acid, alkali and oil.

It is the result of years of constant research, in our Paint Division laboratories manned by skillful chemists experienced in the development of fine finishes.

Write for complete details

Larkin Co Inc. BUFFALO · PEORIA · PHILADELPHIA · Paint Division

KEEP SCHEDULES "ON TIME" with genuine Schrader equipment

• **New No. 2030 Schrader Chuck Gauge,** equipped with Dual Foot Extension Chuck, offers complete trigger control of tire inflation, pressure recording and deflation. Calibrated 20 to 130 lbs. Reaches hard-to-get-at valves. Speeds up maintenance.

• **Schrader No. 8106 "Trutest Special" Tire Gauge.** Every step in manufacture is one of precision. Manufacturing operations held to extremely close tolerances resulting in unexcelled accuracy and service. Calibrated from 10 to 60 lbs. in 1 lb. units and from 60 to 160 lbs. in 5 lb. units. Special factory recalibration service a feature at no extra charge.

• **Schrader Automatic Airline Coupler** speeds interchanging of air operated equipment. Two styles. Standard and swivel type. Split-second operation.

• **Streamlined No. 9006 Schrader Dublchek Valve Cap.** Mechanically unchanged it retains the air tight features which have made fleet owners and motorists demand Schrader Valve Caps for years. Its longer, slightly tapered body is most attractive. Sturdy efficient—a real time saver.

THE above equipment makes air-servicing of tires quicker and easier. Saves time, saves money, saves tires. It will earn its cost many times a year for the truck or bus fleet owner. Contact your regular supplier for further information about standard tire valve parts, etc. A. Schrader's Son, Brooklyn, N. Y. Division of Scovill Manufacturing Company, Incorporated.

Schrader

Reg. U. S. Pat. Off.

Tire-Saving Valves, Caps, Gauges and Air-Service Equipment

How Fleets Recondition Cylinders

(*Continued from page* 67)

We next asked for average mileages between cylinder reconditioning jobs. Many figures were given, ranging from as low as 12,000 miles, to as high as 125,000 miles. Two figures were mentioned very often—40,000 miles was given 23 times; 50,000 miles was mentioned 25 times. Other popular figures were 60,000 miles and 75,000 miles. We did not attempt to figure out any average here—it's too hot for that sort of figuring. However, those who received their copies of this summary can easily do so, especially if an adding-machine is handy.

The next and last question will probably give you a better idea. It asked for comparisons, as to the relative amount of mileage secured from reconditioned jobs, as against new engines. Seventy-seven fleets reported, "Same mileage as from new engine" . . . Nineteen fleets reported, "More mileage than from a new engine" . . . Thirty-three more operators said that they obtained "Less mileage than from a new engine." The balance did not answer.

And that, folks, is the story on Cylinder Reconditioning. May we repeat that these questionnaires are conducted solely for the fleet man's benefit. The information in them is "confidential business" and only those who participate in them are really entitled to the "confidential" summaries which follow them. In these summaries you get *all* the "meat"—trade-names, brands preferred, and everything. So why not start out to-day and become a regular "member" of our Question-of-the-Month Club?"

You can't do it today, however, since no new questionnaire appears in this issue. We decided to give our readers a "break" on account of the hot weather, vacations, and everything. However, a new questionnaire will appear in September or October, and every month thereafter. In return for your efforts in filling this out and returning it to us, we send you a private and personal copy of our tabulation to all the returns. And your own information, of course, is always treated in the strictest confidence.

If you are interested in getting a free copy of our Summary on the subject of Cylinder Reconditioning (we have a few copies left, after supplying the participants with same) just drop us a line on your company letterhead and ask for it. First come, first served. This offer is made to fleet operators only. We're sure you'll find it "meaty" and interesting.

•

Safety Is Paramount in Truck Fleet

(*Continued from page* 42)

during 1921, when a slump occurred all over the country, caused this young company to suffer severe losses from which it did not completely recover for nearly three years. Added to this retarding effect was the fact that shipping by truck was a new idea that had not yet reached the point in prestige where a number of firms had enough faith in it to use it.

One of the busiest officers of the organization today is Mr. Jones, who functions in the capacity of manager. He works a great many hours each day and is often at his desk until late at night. Frequently he is on the job in the early hours of the morning when the gleam of truck headlights announces the arrival of heavily-laden units coming from or departing for one of the cities along the company's regular routes.

Why Wait for Legislation?

(*Continued from page* 44)

pany of New Jersey, is similarly equipped with many safety devices. This fleet of trucks was described in detail in our May issue of this year, so that very little needs to be said here about them.

When it comes to safety equipment—and this includes reflectors, direction-signals, clearance lamps, fog-lights, spot-lights, wig-wag lights and flares, there are two kinds of attitudes expressed regarding same, on the parts of fleet operators. One type of operator will fight shy of *any* safety device, until the law actually compels him to use it. Another type of operator (the sensible type, if you please) investigates the conditions, weighs very carefully the advantages against the costs, considers the safety angle, puts on various equipment and probably has his insurance premiums reduced almost immediately, to say nothing of the sudden absence of banged-up fenders and other minor (or major) catastrophies.

The former type can be somewhat readily compared to the penny-pinching type of yachtsman who does not carry an anchor on his boat because there is nothing in the law compelling him to do so. He is the type who buys the very cheapest and smallest fire-extinguisher that will pass the law, and later on finds out that it won't even put out a simple waste-basket fire. But what can we do about it? All we can do is offer certain so-called "educational" information; we can try to make operators "safety conscious"; and that is the purpose of this article.

We are going to the bat for safety lighting equipment this month, not because we want to see you spend some money, but because we sincerely believe (and most everyone will agree with us) that *any* equipment that makes for greater safety and which will help to prevent accidents, is cheap at any price.

Recent legislation has compelled operators in several Eastern states to equip their vehicles with direction-signalling equipment. These states include Pennsylvania, Massachusetts, New York and Rhode Island. Connecticut and Virginia were among the first to make direction-signals compulsory. Illinois was another. And there are probably several others which shall shortly pass similar laws, and many others which already have them.

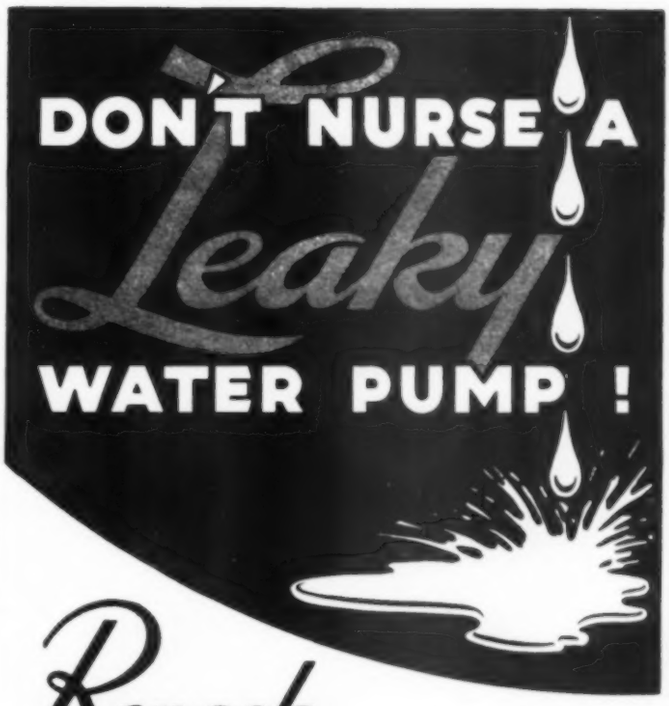
The idea, however, is *not* to wait for compulsory legislation, but to adopt such equipment which, from the experiences of other operators, will make for the utmost in highway safety, especially during the dark hours. There is a wealth of good equipment of this kind on the market today, so that you should have no trouble in making your selection, especially if such equipment is "approved" for use in your particular state.

●

Uniform Traffic Laws Goal of Survey

RESULTS of a nation-wide study of traffic conditions, together with recommendations for promotion of uniformity of motor traffic laws, are to be placed before Congress within a year, under the terms of a measure enacted by the national legislative body recently.

The measure, which allots $75,000 to defray costs of the study, provides for cooperation of Federal, state and municipal authorities. The investigation will be conducted under the supervision of the Secretary of Agriculture by the Bureau of Public Roads. The Secretary is directed to make a preliminary report to Congress within nine months and a final report by June 30, 1937.



Repack it with

GARLOCK
646
RINGS

Drip . . . drip . . . drip! Why take another turn of the packing nut and let it go at that? Isn't it better to REPACK the pump with GARLOCK 646 Rings and avoid overheating, road delays and time out for service? Packaged in lots of 100, 500 or 1000 rings to fit any car.

THE GARLOCK PACKING COMPANY
Palmyra, New York

In Canada:
The Garlock Packing Co. of Canada, Ltd.
Montreal, Que.

GARLOCK

Motor Fleet Lubrication

(*Continued from page* 24)

were used. The feasibility and safety of extending our oil change periods to 2,000 miles was checked and rechecked, even by some of the engineers of leading oil companies.

While the figure of $982.25 is given as a "saving", it is only fair to state that this amount can be greatly reduced, if we deduct the original cost of the oil-filters, and also the cost of the replacement cartridges. Incidentally, we find that we are able to run a cartridge, under average conditions, for 2,000 miles —in other words we change cartridges when the oil is changed.

Further discussion on this subject leads us into the bottom of the crankcase. We admit that you can completely fill up a filter cartridge with sludge and other foreign matter, in but a few hundred miles of operation, especially if you use it on an engine whose crankcase looks more like a rear-end. Everyone has, sometime or other, dropped an oil-pan and has had to push the sludge aside in order to find the crankshaft and connecting-rod bearings. We give our oil-filters a much needed "break" by dropping the oil-pan when one is installed, and completely cleaning out the crankcase, oil-pan, screens, etc. Therefore, we get good service from them, and this pays in the long run.

In addition to dropping oil-pans when installing oil-filters, we have always made it a practice to drop them at least twice yearly. Before dropping them, however, we fill them with flushing oil, run the motors for a short period, and drain out the flushing oil, thus insuring the cleanliness of internal oil passages, oil lines, bearings, etc.

As with other crankcase oils, this used flushing oil is also reclaimed, by filtering. We rigged up an outfit for this work, consisting of a large tank with a pipe line to two ordinary engine oil-filters. The flow to the filters (in series) is by gravity. When the flow stops, it is time to replace the cartridges. Thus many dollars are saved that would otherwise be thrown away. So much for oil filtering.

Referring back to some of the illustrations which have thus far not been explained, we come to Figure 2 (on page 20.) This is a special rack which we built, to hold measuring sticks and three long measuring-tubes. We can test a whole barrel of used oil for precipitation, by merely inserting one of the long tubes, which are open at both ends; by closing up the top with a cork and withdrawing the tube carefully, we get a complete cross-section of what's in the barrel of used oil. Then by corking up the bottom we can retain the oil indefinitely.

Figure 3 is a special tank which we built for the purpose of checking up on settling and precipitation of foreign matter in oil. A steam coil runs through this tank for heating the oil. Samples can be drawn off at any level desired, since the petcocks are spaced 2 inches apart, vertically. This tank was built in our own shop; it is our own idea, we believe.

Figures 4 and 5 (the reclaimer and settling tanks) have previously been described. Figure 6 might look like an ordinary gas-stove and sink to you, but it is our "laboratory" for making "home-made" oil tests, which may or may not mean anything to you, but we have learned that they mean a lot to us. Figure 7, the special light projector, has previously been described.

Figure 8 brings us to the subject of rear-end and transmission lubricants. These lubricants are changed twice a year in all vehicles. Summer lubricant is put in every Spring; Winter lubricant is inserted in the Fall. At each of these times the gear boxes are thoroughly flushed out with a solvent to remove metallic residues, gums, soaps, etc.

In the past, fleet operators (including ourselves) have been throwing away the lubricants thus drained; this practice, we found, has been wasteful and costly. After a series of experiments, we learned that we could "clean" these lubricants by heating them for a period of 40 to

"Waiting for the Load"

Here's one way to get more work out of your trucks—

REDUCE LOADING TIME

A well known Chicago concern recently put on a dozen *Servis Recorders.* Then they got a big surprise. The Recorders showed that their trucks were standing an average of a little over two hours a day at their own loading platform! Nobody had noticed it much. But when this delay showed up plain as day on a *Servis Recorder* chart they lost no time in reducing this to less than an hour per day, and in that way alone *saved over $5000 a year!*

This chart shows up all delays.

Here's a stop of 2 hours!

The Chart Shows It Up

Thousands of trucks are still wasting time in this way because nobody realizes the extent of the waste. Because some of this standing time is unavoidable and therefore legitimate, the tendency is to overlook it altogether, or to "do nothing about it" for a while. But the *Servis Recorder* shows up this waste; also shows all delays *en route*—as well as overtime, speeding, use of truck at night, etc.

SEND FOR FREE BOOKLET—*"Ten Ways of Getting More Work Out of Motor Trucks."*

THE SERVICE RECORDER CO.
1422 Euclid Avenue • Cleveland, Ohio

The Servis Recorder
Tells Every Move Your Truck Makes

50 hours and then permitting them to settle, cooling very slowly. We found that much of the metallic and abrasive foreign matter would then settle out, rendering the lubricants fit for further use, if not exactly as good as new. Our present method is about as follows:

All transmissions and rear-end cases are drained on schedule. The drainage (accumulated at the rate of one drum every 90 days) is placed in a drum with removable cover, as shown in Figure 8 on page 24. A filler pipe enters the drum on one side, at about ten inches up from the bottom, to which is attached a vertical pipe and funnel, which extends to the top level of the drum—see illustration. Note that the filling is from the *bottom*.

When this drum is filled, it is placed in our cleaning tank and left to stand in the hot water (185° F.) and maintained at this temperature for 40 or 50 hours. After this heating, the drum is removed, allowed to cool slowly and is stored away for future use.

When ready to use this "reclaimed" lubricant, a pump is inserted in the cover, with the suction pipe so shortened that oil will only be lifted from a point about 12 inches from the bottom. This prevents the drawing off of the settled portion of the contents, which is discarded. If so desired, this "reclaimed" lubricant can be transferred to the regular containers or dispensers, the same as new lubricant. The cost of this reclaiming is about 12½c per gallon, which has resulted in a considerable saving in our fleet of trucks.

Where it is desired to convert some of this reclaimed lubricant to a "graphited" grease for general shop work, we add about 2½ pounds of Number 2 Powdered Graphite to the reclaimed contents of each drum, heating it again and stirring thoroughly, to get even distribution. This makes an excellent material to use on all joints that are to be taken apart again. We use this mixture on all bolt and nut threads, on gaskets of all types, and in fact every place where a tight joint is required. And believe us, it pays when we come around to taking them apart again. We also use this lubricant on all brake linkages, hook-ups, etc.

We could go on and on giving you many of the things we have done in our attempt to solve our lubrication problems. We have performed countless experiments and have done lots of good, hard work. Checks have been made on practically every vehicle in the fleet, using special meters on the dash and other devices, and our findings would set dizzy even a good statistician. The thing to remember is that we have tackled our problems intelligently. We have engaged the services of outside petroleum engineers. We have taken advantage of the services rendered by the leading oil companies—both local and national.

We have even sent large quantities of motor oil out to be reclaimed by commercial reclaimers, for comparative purposes. In one particular case, we found that the reclaiming cost was 33-1/3 per cent higher than when we reclaimed our own oil. It is only fair to state that the chemical analysis proved that oil reclaimed on the outside tested up a trifle better and a better color was restored, but we seem convinced that our own method of reclaiming is highly satisfactory, considering the saving in dollars and cents—and the fact that the oil thus reclaimed is a *good* oil, and fit for continuous use in our vehicles.

We do not hold that we have "solved" the fleet lubrication problem. But we feel that our efforts have been well worth while—the money spent in research has been returned manifold in future savings. And we are glad to pass this information on for whatever it may be worth to other fleet operators, through the medium of this publication, which we think is the *very best* of its kind. The only thing we regret is that we must remain anonymous.

OIL FILTRATION MANUAL

For Automotive Internal Combustion Engines

WHEN IS OIL IN "GOOD CONDITION"?

A Summary of Modern Methods of Filtering Crank Case Oil

BY

Walter C. Bauer
M.E. B.Sc. Chief Engineer

•

This manual contains a complete and scientific discussion of the proper lubrication of internal combustion engines and of the importance of clean oil.

This manual also includes a short comparison of the operating efficiency of various types of oil filters—the results of over 10 years of research and testing in the development of the Briggs Clarifier.

Fleet owners and shop superintendents will find much useful and interesting material in this brief manual.

If you are interested, we shall be glad to mail you a copy—without obligation, of course. Use the attached reply coupon.

•

BRIGGS CLARIFIER COMPANY

3260 K Street, N.W. Washington, D. C.

Briggs Clarifier Company
3260 K Street, N.W.
Washington, D. C.

Gentlemen:

Please send me, without obligation, your "Oil Filtration Manual."

My fleet consists of ..... trucks. Make of trucks .....

Name .....

Address .....

City ..... State .....

Brewery Fleet

(*Continued from page* 30)

removed at once—a minor item in maintenance to some people perhaps, but to the Leisy fleet management an important procedure in their never-ceasing effort to keep their trucks in efficient operating condition and attractive looking at all times.

In addition to the garage mechanic who works from 4:00 p.m. until midnight, two men, who come in at midnight and stay on the job until 8:00 a.m., are employed for washing and greasing. All trucks are washed twice a week or oftener if required.

Data on mileages, gasoline and oil consumption, repairs, etc., are recorded on the "Garage Foreman's Daily Report," which is reproduced in an accompanying illustration, and which is made out in duplicate, the original in white for the office and the other copy in blue for the garage file. Each driver signs his name on this report before he takes out his truck.

Special effort is continually made by the Leisy executives to keep the driver-salesmen safety minded. Every six months all drivers without accidents are awarded emblems. Twenty-one out of twenty-six drivers went through a recent six-months' period without accidents and during that period there was only one accident where major damage was caused and not a single accident in which personal injury resulted.

Each truck in the Leisy fleet is equipped with a recorder which records the exact time of operation and the length of all stops. Recently special recorders were installed on the trucks for a certain period without the knowledge of drivers, for recording the time the motor was running or idling while making stops. The results finally were tabulated and then posted on the bulletin board without verbal comment, leaving the drivers to form their own conclusions therefrom.

It was found that one driver between the time he started from the garage one day at 7:15 a.m. until he returned at 6:45 p.m. that night had some five hours idling time recorded. If every driver in the fleet would idle his truck as much as this one every day, it was stated, in the bulletin there would be an extra charge of $3,500 for gas, enough to drive a single truck 197,000 miles.

The tabulation also showed a fleet total of twenty-eight hours in idling, and what this meant if continued throughout the entire year was indicated by the following:

28 hours per day running motor idle = 8,400 hours per year.

28 hours per day running motor idle = 9,400 miles of service.

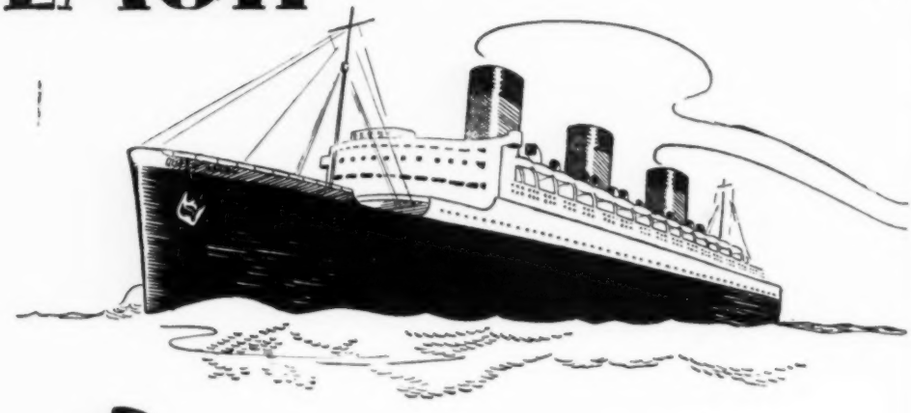
28 hours per day running motor idle = 24 months of service for one truck.

These figures drove home to the drivers a real lesson and as a result the fleet fuel mileage average has since been increased 1½ miles per gallon.

In standardizing on one make of truck and largely on one size, the problem of maintenance, Mr. Case remarked, has been greatly simplified. For one thing, the mechanic knows his trucks better and can do a more efficient job of maintenance and then the expense of carrying a supply of replacement parts is greatly reduced. Spare brake shoes, water pump assembly, clutch, generator, etc., are of course carried, and if any of these in one of the twenty-three standardized trucks in the fleet comes in at night, requiring extra attention, the mechanic can quickly substitute one of the spare units and repair the other unit at leisure.

Thus, the truck can go on its way the next day doing profitable work without fuss or worry or any interruptions at all and no need of routing out of bed the manufacturer's repair man at midnight or later for badly needed parts. An investment of only $200 is carried in replacement parts, which of course would have to be much greater for safe maintenance if the fleet were made up of a variety of units.

EACH *in its own way*



The Queen Mary is tops when it comes to jumping the waves.

Unbeatable is the Weatherhead fuel line when it comes to taking vibration.

THE WEATHERHEAD CO.
620-724 Frankfort Ave., Cleveland, O.

Governors

(*Continued from page* 40)

are in the hands of not the best type of driver and a speed check is going to save equipment and help avoid accidents without any great sacrifice in the ability of the unit to do a day's work.

In conclusion, it would seem that any unit equipped with an engine which is liable to be over-speeded and, therefore, damaged, should be equipped with a governor and that such action will be reflected in all around better operation and lower costs.

From a viewpoint of safety, safe operating speeds vary over a wide range depending on the service, the locality where the unit is working and the type of driver secured for that particular service. The top speeds are being held in the vicinity of 50 miles per hour for buses and light units and 30 to 35 miles per hour for heavy units.

•

"Locals" to Coordinate

COMING on the heels of the opening of hearings on the question of rail pick-up and delivery service by the Interstate Commerce Commission, one of the most significant moves in the direction of solving an acute transportation problem was made last month, when the National Local Trucking Associations, Inc., representing operators engaged in strictly local service and as "terminal units", announced that it will develop a unified national program for local collection and delivery service, coordinated to serve rail, air, steamship and over-the-road highway carriers. This announcement was made by Philip A. Smith, Jr., of Chicago, President of the Association.

"As the initial step," he said, "The Association will set up a national 'planning committee,' with Eugene P. McNeil of Chicago, as Chairman. Vested with authority to proceed with the program as rapidly as possible, this committe, which will be representative of local truck operators in all parts of the United States, has been called to meet in Chicago early in August, to lay the groundwork for submitting its recommendations to all transportation agencies, as well as shippers and other interests concerned."

Pointing out that local truck operators, with years of experience in the expeditious handling and routing of traffic for shippers, and with a knowledge of methods to assure maximum service and economy to shippers and other carriers, in turn advantageous to the public, are best equipped to solve the pick-up and delivery problem, Mr. Smith declared that the Association will move promptly in adopting and recommending a program for its solution.

"Pick-up and delivery service is of vital importance in any effort to eliminate duplicated service and resultant economic waste through a coordinated transportation system. However, it must be in accord with sound transportation economy, which will preserve individual enterprise, as against monopoly; and assure adequate transportation charges, with a division among all agencies performing the service that is compensatory. The public interest is not served when rates are lowered for one unit of a complete service and the loss made up in higher rates for another."

The decision of the National Local Trucking Associations, Inc., to attempt to settle the controversy over pick-up and delivery service and rates followed a meeting of its Executive Committee in Washington, at which the contemplated program was authorized.

•

Clarke Manages Battery Sales

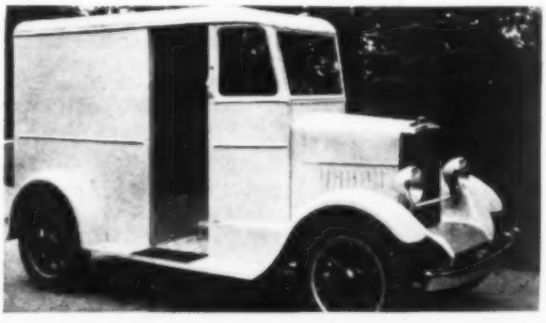
THOS. H. CLARKE, member of the B. F. Goodrich Company battery sales department since 1933, has been named manager of battery sales for the company.

COULD A "SWAT KING" KNOCK HOME RUNS WITH A FENCE POST?

The powerful, home run hitters in the Major League would find a fence post a whale of a handicap... too heavy to get into quick action . . . too unwieldy for accurate hitting. But a "Swat King" with a fence post is no more out of order than a truck or trailer loaded with unnecessary body weight. Dead weight in a truck is like a fence post in a ball player's hand.

Haskelite Plymetl truck paneling eliminates dead weight, makes flatter, smoother sides and stronger bodies . . . Plymetl is many times stronger than steel of the same weight. These light, strong bodies of Plymetl mean bigger and more profitable payloads.

Insist upon Plymetl in your next specifications.



NEW DOOR-TO-DOOR DELIVERY VEHICLE MADE BY DIVCO TWIN TRUCK CO. WITH PLYMETL BODY

HASKELITE MANUFACTURING CORPORATION
208 WEST WASHINGTON STREET, CHICAGO, ILLINOIS

Sharlock Vice-President of Bendix

HERBERT L. SHARLOCK, widely known throughout the automotive industry, was elected vice-president of Bendix Products Corporation, according to a recent announcement. . . . Mr. Sharlock's official title will be Vice-President, Director of Publicity, of Bendix Products Corporation.

•

N. A. P. A. Offers Chevrolet Manual

A REPAIR manual of 48 pages has recently been published by the National Automotive Parts Association, and is now avaiable on request. . . . This book, which contains 85 illustrations and diagrams, is conveniently indexed, and covers all units of Chevrolet cars and trucks, giving comprehensive data on service problems. Manuals of this kind should go a long way to provide better operating experiences with the vehicles covered, in the hands of users.

•

Gilbert Joins Studebaker Staff

N. O. GILBERT, a veteran of 25 years of automotive experience, has joined the field sales staff of The Studebaker Corporation, according to a recent announcement. . . . Mr. Gilbert will be district manager, associated with the Kansas City branch of the corporation.

OIL CONDITIONING is Here!

KRALINATOR—the oil conditioner—is making lubrication history because it actually conditions contaminated oil as you drive.

Thru a new application of basic principles in petroleum technology, KRALINATING inhibits sludge formations and maintains new oil specifications in the crankcase every mile. It restores the blackest oil to its original color.

The KRALINATOR is setting new standards of economy and performance in truck, bus, tractor and Diesel engines everywhere. It maintains a clean crankcase—makes oil changing unnecessary.

Oil consumption is substantially reduced. Overhaul periods are lengthened as much as 300% by giving peak lubrication every mile.

KRALINATOR

is inexpensive and easy to install on any automotive equipment. It is the only true oil conditioner and is sold with an unconditional money back guarantee.

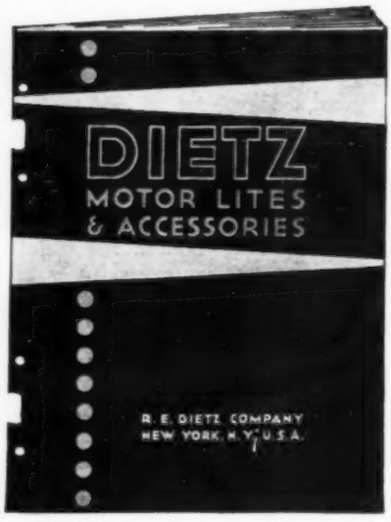
Write at once for the whole story. Territories available to distributors.

OLIXIR PRODUCTS CO.

895 NIAGARA ST. BUFFALO, N. Y.

In Canada: National Industries, Inc., 734 St. Antoine, Montreal, Que.

. . IT PAYS TO KEEP YOUR INFORMATION UP-TO-THE-MINUTE ON APPROVED LIGHTING & SIGNALING DEVICES . . . . .



DIETZ NEW CATALOG IS JUST OUT

A Request Will Bring A Copy For Your Files

Because of the changes that are constantly taking place in lighting and signaling requirements for motor trucks and busses, the new Catalog should prove interesting for reference, particularly as it illustrates the latest models in approved equipment, with sufficient variety of styles and types to meet every need or preference.

DIETZ

R. E. DIETZ COMPANY
NEW YORK
Pioneer Makers of Vehicle Lamps
Founded 1840

Ford at Great Lakes Exposition

FORD Motor Company is now exhibiting at the Great Lakes Exposition at Cleveland. . . . The Ford exhibit is located in the Automotive Building, front section, right at the main entrance. Its principal novelty feature is the "car in the clouds" in which through an optical illusion, a Ford V-8 is seen being driven through the clouds above a model town.

•

Ryan Elected Motor Lines Vice President

AT a special meeting of the Board of Directors held recently, T. S. Ryan was elected vice-president in charge of traffic for the Utah-California Motor Lines, Inc., with headquarters at Salt Lake City, Utah.

USE VEEDER-ROOT HUB ODOMETERS

In order to know where cost-cutting can be done—in gasoline, oil, tires, repairs—you need *accurate* mileage records. The kind of records that are obtainable from Veeder-Root Hub Odometers.

These recording instruments can be adjusted to agree *to a tenth of an inch* with all changes in wheel and tire dimensions. They clock up every mile a truck goes—both forward and backward.

Veeder-Root Hub Odometers are built to stand up under the hardest service. Dust and dirt cannot get inside. Tampering is easily detected.

Write for proof of the savings these instruments are bringing to others.

VEEDER-ROOT Inc.
HARTFORD, CONN., U. S. A.

"Facts and Figures" of the Auto Industry

ABUNDANT evidence of the recovery progress achieved by the automobile industry with last year's operations accounting for an output of 4,119,811 motor vehicles which, with replacement parts, tires and accessories had a total wholesale value of $3,319,497,973—is presented in the 1936 Edition of *"Automobile Facts and Figures"* published recently by the Automobile Manufacturers Association. All subjects relating to the manufacture, sale and operation of motor vehicles are covered statistically in this new 96-page book.

The industry's 1935 operations, both from the standpoint of number of units produced and the value of output, were at a level almost two hundred per cent above the depression "bottom" of 1932, the book discloses.

Directly and indirectly, more than six million workers derive their incomes from occupations in connection with the manufacture, merchandising and operation of motor vehicles. Of these, 439,000 workers employed directly in motor vehicle and parts factories received $657,332,000 in wages during 1935.

A novel method of showing the trends in car prices is used in the book. The average factory price of 1935 cars is presented in terms of the average price per pound and per horsepower. On this basis the price of the average 1935 car was 21c per pound or 17c less than the price at which 1925 models were sold. On the horsepower basis last year's cars were sold at the rate of $7.00 per horsepower, whereas in 1925 the price amounted to $27.50 per horsepower.

In keeping with the intensive program for the promotion of traffic safety that is being conducted by members of the automobile industry, a 12-page section of the book is devoted to this important subject. Informa-

FOR MOTORS THAT WORK FOR THEIR KEEP

★ Truck and tractor engines have to work for their keep. Power and fuel economy have to be real. Starting has to be prompt.

Most truck and tractor manufacturers use Zenith Carburetors.

Could any stronger endorsement of efficiency be desired?

Older truck and tractor engines are usually enormously improved by installing heavy-duty Zenith Carburetors. Hard-starting, rough-running, wasteful engines are often completely cured by this quick and inexpensive remedy.

ZENITH FUEL FILTERS

More than a mere screen—more than a strainer—the Zenith Filter removes water and harmful abrasive dirt and is *instantly cleanable* without need for renewing anything! Made for all engines—special Heavy-Duty model for truck and tractor service.

Write for full details, mentioning type of engines and the nature of your business, if you are interested in carburetor sales.

ZENITH CARBURETOR COMPANY
(Subsidiary of Bendix Aviation Corporation)
696 Hart Avenue, Detroit, Michigan

ZENITH CARBURETORS

Built for Permanence — Calibrated for Performance

TRUXMORE
WORLD'S BEST 3RD AXLE
In Summer, Prepare For Winter
TRUXMORE
Stops Dangerous Jacknifing and Side-Skidding on Icy Hills
Cuts Costs—Doubles Hauling Profits—Replacing Semi-Trailers
TRUCK EQUIPMENT CO. INC.
1791 FILLMORE AVE. BUFFALO, N.Y.
Chicago, Ill.
Philadelphia, Pa.
Pittsburgh, Pa.
Boston, Mass.
New York
Syracuse, N. Y.
Binghamton, N. Y.
Rochester, N. Y.
Erie, Pa.

tion regarding work being carried on by the industry and other national organizations for the reduction of traffic accidents as well as statistical data regarding traffic mishaps are featured in this section.

Some of the other interesting facts disclosed by the book are:

Nine out of every ten motor trucks made last year had a capacity of less than 2 tons.

Only one out of every two hundred passenger cars produced in 1935 was an open model.

95 per cent of the passenger cars produced last year had a wholesale value of less than $750 each.

New York State led all other states in the number of motor vehicle registrations with 2,330,962 cars and trucks registered by its citizens. However, motor vehicle ownership was more densely concentrated among the residents of California where a ratio of one hundred motor vehicles for every 262 of population was reported.

Motorists, as a class, paid in special taxes one out of every eight dollars collected by national, state and local government. Total motor vehicle taxes amounted to $1,286,000,000 last year.

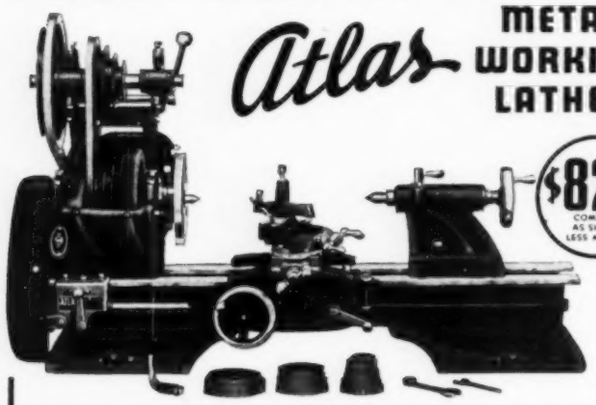
The automobile industry led all other manufacturing industries in the value of its export sales.

Nearly three out of every four motor vehicles in the World are owned in the United States.

The automobile industry maintained its position as the largest single consumer of steel, rubber, plate glass, upholstery leather, gasoline and many other products.

48,492 communities in the United States, representing a population of more than 7,800,000 people, have, no railroad facilities and are dependent entirely upon highway transportation.

NEW! MODERN!
Atlas METAL WORKING LATHES



MODERN DESIGN • MODERN CONSTRUCTION

Piston finishing, connecting rod boring, armature and mica undercutting, and scores of other jobs—do them in your own maintenance department with a modern Atlas precision lathe—designed and built to give more value, accuracy, and efficiency than ever before during the 25 years Atlas has manufactured precision shop equipment.

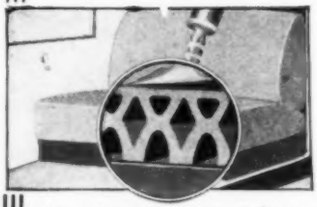
The Atlas shown is the first truly modern lathe of its size and price. Bed is 36" long. Has 10¼" swing, takes 18" between centers. Guaranteed accurate to .001".

Other new metal lathes from $35.50 up. Send today for new catalog of metal and wood lathes, drill presses, tools and attachments.

ATLAS PRESS CO., 824 No. Pitcher St., Kalamazoo, Mich

Complete displays at
CHICAGO 35 E. WACKER DR. NEW YORK 130 W. 42nd ST. PHILADELPHIA 113 N. 3rd ST.

FOR COMFORT AND ECONOMY
NOTHING EQUALS Black Diamond
ALL-RUBBER
SEAT CUSHIONS



This shows the famous exclusive diamond grid construction which assures comfort, long life and no upkeep expense. Note the patented, sturdy, wearproof construction.

No other type of cushion provides the complete comfort and total freedom from upkeep expense offered by Black Diamond All-Rubber seat cushions and back rests. Their initial cost is surprisingly reasonable and the first cost is the last, for they'll normally outwear the vehicle in which they are installed. Available for any size or shape of cab. Write today for complete details.

KARPEX MFG. CO., 1428 E. 19th St., Indianapolis, Ind.

The BIG LIFT

Here's tremendous power, wide range, easy operation—in a full line of hydraulic jacks, hand and floor types, from 1 to 75-ton capacities.
For floor, curb, road, and shop use — Buy Blackhawk. Ask your Jobber Salesman. Write us for literature.
Blackhawk Mfg. Co.
Dept. F. O. 3 Milwaukee

BLACKHAWK HYDRAULIC JACKS

An Interesting Service Record

WITH a service record of approximately 100,000 miles each in the last two years, six General Electric refrigerated truck bodies were recently removed from their worn-out truck chasses and placed on new mountings to continue refrigeration service for a company in Atlanta, Ga.

Most of these trucks are run on a schedule of three two-day trips each week, totaling from 1,200 to 1,500 miles. Truck chasses and refrigerated bodies are subjected to severe service by the speeds necessary to cover the long delivery routes, many of which are over gravel roads.

This interesting bit of information is furnished by General Electric Company, Schenectady, N. Y., who will be glad to send you a completely illustrated catalog of their refrigerated bodies on request . . . You'll mention FLEET OWNER, won't you?

•

Pacific Freight Expands

AN important event in motor transport circles is the announcement recently made by Pacific Freight Lines that they have acquired the entire franchised operations of Keystone Express System, the Los Angeles-Newport Freight Line, Richards Trucking & Warehouse Company and the Richards Express Company, excluding shipside service to harbor points. This acquisition, which has been approved by the California Railroad Commission, makes Pacific Freight Lines the second largest certified motor transportation company in America, it is claimed.

Some idea of the size of the enlarged Pacific Freight Lines organization may be gained from the fact that this company alone, previous to its acquiring the other lines, operated over 1100 franchise miles in the territory from San Luis Obispo and Fresno, on the north, to San Diego and Calexico on the south. During 1935 the company operated over 375 pieces of rolling equipment, which travelled over five and a half million miles, serving approximately 225 cities through its 18 stations and 430 employees.

Pacific Freight Lines, through affiliation with the Valley Express, also serves 400 additional cities in northern and central California, including San Francisco, Oakland, and other East points, as well as Sacramento, Stockton and inland points. Overnight service is available to most of these cities, particularly to San Francisco and the Bay region.

In acquiring these new truck companies, Pacific Freight Lines takes over 157 employees, 100 motor trucks and equipment serving 305 cities and towns out of 42 additional freight stations. They also add 1750 franchise miles to the territory operated.

Pacific Freight Lines, which is a local organization, privately owned and operated, has been in existence for more than 20 years, either under its own name or through predecessors. Officers and chief executives of the company are: G. M. Duntley, president; F. A. Daugherty, secretary-treasurer; C. G. Anthony, vice-president and traffic manager; J. E. Daugherty, vice-president in charge of freight solicitation, and Ellis Longnecker, in charge of equipment and operations.

•

Heavy Truck Taxes Paid

APPROXIMATELY 50 per cent of special motor truck taxes, amounting to about $314,000,000 in 1935, was passed on to consumers in the form of increased prices for every-day necessities, a study of motor truck taxation in the United States made by the American Petroleum Industries Committee indicates.

Preliminary registration figures for 1935 and occupational analysis of truck registrations made by the U. S. Bureau of Census and private research agencies, the Committee finds, show that about 48 per cent of all trucks are owned by growers, processors, and distributors of food and food products. This food group was charged with about $150,000,000 truck taxes in 1935.

The study further has revealed that 1935 truck taxes established a new all-time record. Motor trucks last year constituted 13½ per cent of all vehicles registered, but paid about 24.4 per cent of the total motor vehicle taxes. The 1935 truck tax bill of $314,000,000 was only 20 per cent under the value of all motor trucks manufactured in the United States during the year.

•

Plan Fleet Clinic

A CONCISE presentation of the whole subject of safety in vehicle fleet operation will feature the Fleet Safety School at the 25th National Safety Congress and Exposition in Atlantic City, October 5-9. The school will be conducted by J. S. Baker, Secretary of the Committee on the Driver and field representative of the National Safety Council. It will represent the first time that such a school or accident clinic has been a part of the Congress Vehicle Fleet Sectional meetings. The clinic will be conducted each morning of the Congress from 8:30 until 9:30.

The aim will be to make the course such that a man, who is about to undertake the job of directing a fleet safety program for the first time, may get a thorough understanding of the fundamentals and a fairly clear idea of the steps that must be taken to assure a reduction of accidents.

The work will be taken up in the form of lectures, each of which will be accompanied by certain exhibits of illustrative material, and will be followed by a recitation or discussion in which there will be ample opportunity to discuss subjects presented at that session.

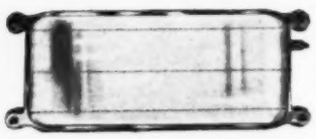
A LOT OF SHOPS ARE TURNING TO ECCENTRIC VALVE SEAT GRINDING!...
THE HALL MODEL E-J GRINDER
. . . And no wonder . . . If the factories—38 of them—have been unable to find as fast, accurate and economical a method of grinding valve seats in either production or service, how can a service shop expect some other seat servicing method to give him the production precision, speed and economy possible with the ECCENTRIC Grinder? . . . For PERFECT PERFORMANCE in today's high-speed, high-compression motors you've got to give them PERFECT VALVE SEATS . . . The way to get them is with ECCENTRIC grinding . . . Just a few more dollars buys a LOT more Grinder . . . Ask your Jobber or write us today for complete information.
THE HALL MANUFACTURING CO. 1620 WOODLAND AVE. TOLEDO, OHIO, U. S. A.

HERE THEY ARE

THE SENSATIONAL NEW LION CLEAR-VISION APPLIANCES FOR 1936-37

WATCH THEM CLICK!

New!
LION SLEET-CHASER
with improved



RIDGED SUCTION CUP

DOUBLE AIRTIGHT SEALING CHANNEL

The New 1936-37 LION SLEETCHASER incorporates efficiency with safety. Glass is embedded in new, improved DOUBLE AIR-TIGHT SEALING CHANNEL. Frame is held to windshield by new RIDGED SUCTION CUPS with adjustment knobs. Three coiled wires heat windshield quickly with least battery drain. Finished in new attractive neutral color or chrome. Packed in display box.

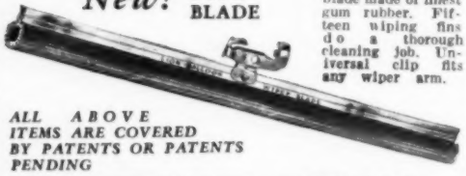
New!
"Balanced Pressure" Wiper Arm

Offers advantage of a steady downward pressure on windshield by means of a specially designed spring, yet may be lifted easily. Adjustable to any desired length in a jiffy without tools. Fits any car. Streamline design in beautiful chrome finish.

New! **"BALANCED PRESSURE" WIPER BLADE**

Only type on market with new "Balanced Pressure Bow" which permits equal distribution of pressure along entire length of blade and prevents streaky windshield. Rocking motion prevents chattering and gives more efficient wiping action.

New! **BALLOON TYPE BLADE**



A new type wiper blade made of finest gum rubber. Fifteen wiping fins do a thorough cleaning job. Universal clip fits any wiper arm.

ALL ABOVE ITEMS ARE COVERED BY PATENTS OR PATENTS PENDING

LION PRODUCTS COMPANY
LYNN, MASSACHUSETTS, U. S. A.

"over mountainous routes . . . . . little signs of wear"

"The Cemcalloy Brake Drums after being in service 20,000 miles over mountainous routes are still in excellent condition, showing little signs of wear." **SHIRK'S MOTOR EXPRESS, LANCASTER, PA.**

No Cemcalloy Brake Drum has EVER Failed In three years' time not one Christiana-designed brake drum has *ever* failed from any cause whatever. Every drum installed is still in daily, useful service. Made from a special alloy iron which is both heat and wear resistant, they give from 4 to 20 times the service of ordinary brake drums.

CHRISTIANA MACHINE CO., Christiana, Pa.

Write for details and prices, stating makes and models, type of service and quantity.

CEMCALLOY
Heavy Duty BRAKE DRUMS

1935 Fleet Accident Statistics

(Continued from page 33)

An examination of the experience of large and small bus fleets shows that small units, on the whole, had lower rates during 1934-35 than did large ones. The increase in rates over the previous fiscal year, however, was considerably larger among small fleets, as shown by the following tabulation.

Size of Bus Fleet	1934-35 Accident Rate	Percentage Increase from 1933-34 to 1934-35
All Fleets	2.66	15%
Large	2.75	14%
Small	2.18	22%

The outstanding feature in the 1934-35 accident experience of truck fleets is the improvement made over the previous year. The reduction in accident rates averaged 8 per cent, which was the largest decrease for any type of motor vehicle operation. The rate for truck transportation, however, is still high, 3.34, in comparison with 2.66 for bus fleets and 1.53 for passenger car drivers.

Smaller truck fleets had somewhat lower accident rates during 1934-35 than did larger units. Middle-sized fleets, as shown by the following tabulation, had the lowest 1934-35 rate and the greatest reduction from the previous year.

Size of Truck Fleet	1934-35 Accident Rate	Percentage Reduction from 1933-34 to 1934-35
All Fleets	3.34	8%
Large	3.42	7%
Middle-sized	2.97	12%
Small	3.33	9%

The 1934-35 experience of different types of truck fleets, as in former years, varied widely. Considering only groups in which 1,000 or more trucks were reported, inter-city trucking fleets had the lowest average rate, averaging 1.69, and department store and other retail delivery fleets had the highest rate, 4.38.

City trucking fleets, on the other hand, made the largest reduction over the previous year in their accident rate, 15 per cent.

●

Streets Safer, Census Bureau Shows

ACCORDING to the U. S. Bureau of the Census, the number of urban automobile fatalities in 86 cities during the four-week period ended May 9 was 628, as compared with the total of 654 for the corresponding period of 1935. Each of five successive months this year has witnessed fewer such fatalities than the corresponding month of 1935, according to the official figures.

as LOW as $4.60

SPECIAL: Complete special-priced construction sponge rubber cushions (as shown in picture) as low as $4.60. Write for prices on your sizes.

STANDARD: Patented, full-cushion made-to-order Sponge-Aire construction—the ultimate in comfort and economy, available at moderate prices. Write for prices on your sizes.

SPONGE-AIRE SEAT COMPANY, Inc.
BUFFALO, N. Y.

DON'T TAKE OUR WORD FOR IT!
Ask any of the many satisfied owners about Gerstenslager-Built Bodies.
THE GERSTENSLAGER CO., WOOSTER, OHIO

LATHAN
BESLER
POWER BRAKE
With "LOCOMOTIVE CONTROL". Write for FREE Catalog.
LATHAN CO., Inc. SAN FRANCISCO—Polk and Pine DETROIT—477 Selden Ave.

THAR SHE BLOWS! AND SIX CENTS WOULD FIX IT WITH *Sani-Flush*

Send for a free trial

BEWARE of a clogged radiator. It runs up cost of operation. It leads to expensive repairs. Keep radiators clean and motors cool with Sani-Flush. A cleaning costs only 6c per passenger car (15c for largest trucks, buses and tractors).

Sani-Flush is perfectly safe. It is not caustic. Cannot hurt aluminum cylinder-heads, fittings or motor block. Sold in economical 25-lb. pails. At all grocery, drug and hardware stores or jobbers. Write on your firm's stationery for a generous free sample. Try it for yourself. No obligation.

THE HYGIENIC PRODUCTS COMPANY
218 SEVENTH STREET CANTON, OHIO

N. Y. Auto Show—November 11-18

TWENTY-NINE makes of cars and trucks will be exhibited at the next National Automobile Show, which will be held in Grand Central Palace, New York City. . . . The Show opens on Armistice Day (Wednesday) . . . Alfred Reeves will manage the Show.

Roberts Mgr. of FWD Milwaukee Branch

CHESTER J. ROBERTS has been appointed manager of the Milwaukee (Wis.) branch of The Four-Wheel-Drive Auto Company. . . . Mr. Roberts has been with the FWD Company since early in 1935. . . . Our best to you, Mr. Roberts.

Chet Morledge Joins Goodrich

GOODRICH announces the fact that Chester T. (Chet) Morledge has recently joined the sales staff of their tire division. . . . Morledge, former vice-president in charge of sales of The India Tire Company, has been in the rubber industry since 1920.

DUA-SAF SIGNAL

The Stop-Light that Speaks with Action
Combination Tail and Swinging STOP Light for all passenger cars.
List Price: $8.50
F.O.B. Chicago
Write for fleet discounts and full details

SAFETY SIGNAL DEVICES, INC.
5045 BROADWAY CHICAGO, ILL.
Western Distributors: Transportation Guarantee Co., Inc., 35 Chesley St., San Francisco, Calif.

High Handling Costs and Spoilage prey on your foodstuffs in transit. Guard load and profits in
MASTERCRAFT TRUCK BODIES
They protect the product, save valuable time, give big advertising value without a price penalty

BUCK MFG. CO., LANSING, MICH.

FOR THE OIL GASOLINE & WATER CONNECTIONS
VELLUMOID
VELLUMOID VELLUMOID

You can absolutely rely on VELLUMOID. A gasket costs so little, and is so important, why not use the best?
THE VELLUMOID CO., WORCESTER, MASS.

TRU·STOP
EMERGENCY BRAKE

obeys the commands of
SAFETY!

● This brake—smooth and noiseless in its action, neither chattering nor grabbing—brings truck or bus with limit load to a full stop quickly and easily.

This brake qualifies fully under the rigid requirements of safe driving laws now being enforced in many states.

The Tru-Stop Emergency Brake is easily installed and easy to service. Your driver can do the job himself.

Tru-Stop is a safe driving brake. It is also an economical brake because its ventilated discs throw off the heat and prevent overheating. Brake power is controlled positively by the hand on brake lever. Action is applied equally over the surface of linings so that they wear longer.

For the sake of safety, and for the better performance of your trucks or buses, install Tru-Stops. If further information is desired write to us.

AMERICAN CABLE COMPANY, Inc.
Automotive Division, Bridgeport, Connecticut
An Associate Company of American Chain Company, Inc.
In Business for Your Safety
Manufacturers of the famous WEED TIRE CHAINS

TRU·STOP
EMERGENCY BRAKE

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UNIVERSAL JOINTS
SELDOM NEED REPLACEMENT

Fleet operators know that every cost item avoided, means an added profit in successful operation. Decisions are influenced by standard equipment items and parts which have an established reputation for efficient, low cost, uninterrupted service under hard usage.

BLOOD BROTHERS UNIVERSAL JOINTS have established a truly remarkable record for long life and low maintenance cost, because of their simple design, efficient sealed lubrication and excellent workmanship.

The New "Series N"
Needle Bearing Joints

FEATURE: Simplicity
Accessibility
Adaptability
Greater Angularity
Greater Capacity

A successful attempt has been made to offer the most efficiently operating Universal Joint that accurate workmanship and sound engineering can produce from the most carefully selected and best available alloy steels.

The new "Series N" Needle Bearing Joints are manufactured in four sizes: 4N—5N—6N—and 7N. Write today for complete data or any additional information you may require.

BLOOD BROTHERS
MACHINE COMPANY
ALLEGAN MICHIGAN

AS LITTLE AS $1.50 A DAY FOR A SPACIOUS ROOM ON *Michigan Avenue* IN CHICAGO

MICHIGAN AVENUE AT CONGRESS

HOTEL
AUDITORIUM

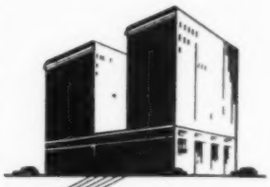
WITH PRIVATE BATH *from* $2.50 WITHOUT BATH *from* $1.50

GEO. H. MINK *Manager*

Here's a hotel value for you. A large room right at the edge of the Loop, with every comfort and luxury at a rate surprisingly low

Preferred Position In
MINNEAPOLIS

Visitors to Minneapolis prefer the Andrews because it combines the well being aroused by comfortable surroundings, flawless service and tasty food with the opportunity of living in the center of business, shopping and amusement activities.



Complete Garage Facilities
Theodore F. Stelten – Manager

Rates from $1.50

ANDREWS HOTEL

4TH STREET AT HENNEPIN AVE.

PHILADELPHIA'S MOST CONVENIENT HOTEL

600 Rooms, each with bath
Rates from $2.50

UNLIMITED PARKING

HOTEL PHILADELPHIAN
Formerly Hotel Pennsylvania
39th and CHESTNUT STREETS

Ohio Club Asks Federal Tax Repeal

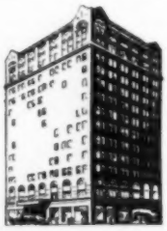
RESOLUTIONS calling for immediate repeal of the duplicating federal tax on gasoline, and for reduction of automotive taxes through highway planning and the building of low-cost roads, were adopted by the Ohio State Automobile Association at its annual convention at Cedar Point, Ohio, recently.

The resolutions held that the taxation of gasoline should be the exclusive right of the states, and declared that motor taxes, now averaging 25 per cent on the assessed valution of motor vehicles, "can be lightened if highways are planned and constructed economically in accordance with present and future traffic requirements."

HOTEL
PRESIDENT
Where Living is an Inexpensive Luxury

450 ROOMS WITH BATH
FROM $2. SINGLE
Managing Director

Here are all the comforts of the fine hotel ...wonderful food in the Coffee Shop and Walnut Room. Garage opposite entrance
PERCY TVRRELL



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MISSOURI
BALTIMORE AT 14th STREET
Just out of the Noise Zone

Friendliest Hotel in
INDIANAPOLIS

250 MODERN ROOMS

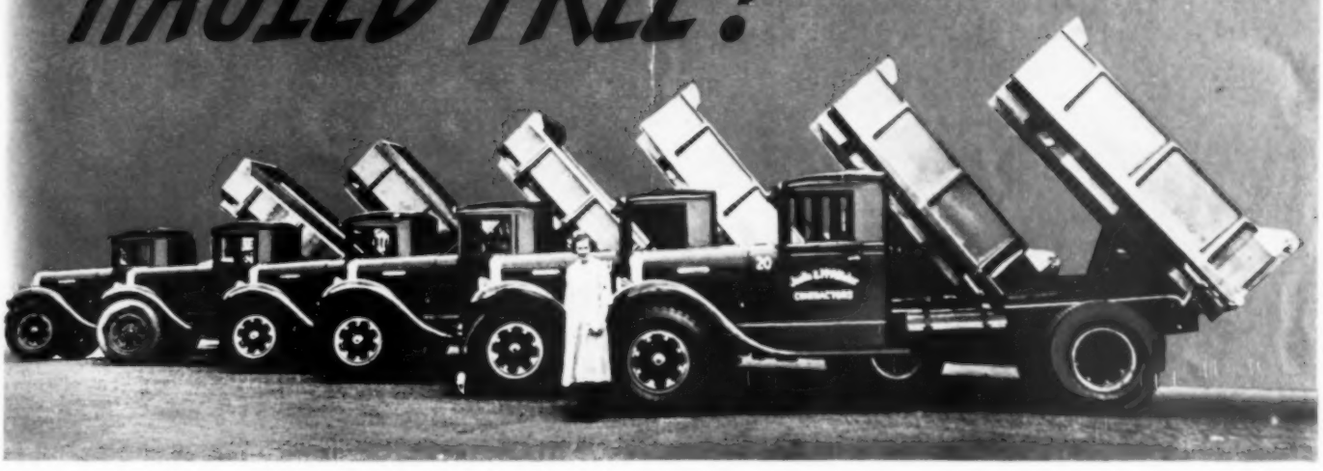
FROM $1.25 *WITH RUNNING WATER*
$1.50 *WITH BATH*

F. R STUBBINS, *President*

Hotel LINDEN
ILLINOIS AT NEW YORK ST.

34,000 CU. YARDS OF *Bonus-Load*

HAULED FREE!



For Joslin and McAllister, Contractors, the Brown Metal Works of Spokane recently constructed 6 dump bodies of Alcoa Aluminum.

6 months later this letter:

Brown Metal Works
East 404 Sprague Avenue
Spokane, Washington
Gentlemen:

We are well pleased with our new Aluminum Dump Bodies, as they have shown little or no wear, after six months of constant service.

During the six months of operation, they have hauled 34,000 cubic yards free of cost, over the ordinary steel type construction. These light weight units have also increased the speed of our operations.

With these facts in mind, we are glad to recommend Aluminum Dump Bodies for greater profits.

Yours very truly,
JOSLIN & McALLISTER

after another 6 months:

Brown Metal Works
East 404 Sprague Avenue
Spokane, Washington
Gentlemen:

After more than a year of operating with the Brown-Built Aluminum Dump Bodies with which you equipped our fleet of International trucks, we take pleasure in advising you that same have given complete satisfaction, in fact, they have exceeded our expectations.

The bodies have been used in highway surfacing operations and at this time show but slight wear. Due to the light weight of the body we are enabled to carry more payload during surfacing operations, and to transport more tonnage in moving from one project to another, and we take pleasure in recommending highly "BROWN-BUILT ALUMINUM DUMP BODIES."

Yours very truly,
JOSLIN & McALLISTER

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